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

Tamara Taggart (iD)
George Washington University

Wizdom Powell
University of Connecticut

Nisha Gottfredson, Susan Ennett, and Eugenia Eng
University of North Carolina at Chapel Hill

Linda M. Chatters
University of Michigan

Decreasing the number of adolescents who have never had sexual intercourse is one way to address 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 ($n = 1,170$), 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 in profile membership. Findings contribute to understanding ethnic heterogeneity among Black adolescents and racial identity and religiosity as sociocultural factors that influence sexual initiation; and support reconceptualizing Black adolescent religiosity.

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 13–19 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, 2011). 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, 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 causal 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 (P. H. 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 intragroup or noncomparative 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

This study used latent profile analysis (LPA) 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 this 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, aged 13–17 years, who had a parent or guardian participate in the National Survey of American Life (NSAL). The NSAL sample was based on a multistage 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 nonindependence in selection probabilities within households, as well as nonresponse rates across households and individuals. The weighted data were poststratified 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 1,170 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?"); nonorganizational religious participation which consisted of two items capturing private, noninstitutional, 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 α for religiosity was .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, 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 participants 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 was .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 α was .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 α was .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 United States. 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 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 (L. M. 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 in 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 L. M. Collins and Lanza (2013), 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 (Sclove, 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 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 >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 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 1,170 African American (n = 810) and Caribbean Black (n = 360) adolescents. The mean age of the sample was 15.03 ± 1.42 years. The majority of the sample identified their religious affiliation as Protestant (71%). Approximately, 35% self-reported being sexually active (see Table S1 in the online Supporting Information for the sample characteristics). Moderate statistically significant correlations were observed between organizational religious participation and private regard (r = .13, p = .01), nonorganizational religious participation and racial centrality (r = .18, p = .006), nonorganizational religiosity and public regard (r = .08, p = .007), subjective religiosity and private regard (r = .11, p = .02), and religious support and racial centrality (r = .17, p = .01). Larger statistically significant correlations were observed between organizational religious participation and nonorganizational religious participation (r = .69, p < .001), organizational religious participation and subjective religiosity (r = .64, p < .001), religious support and subjective religiosity (r = .60, p < .001), centrality and public regard (r = .46, p < .001), and private regard and public regard (r = .28, p = .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 LMR 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. *The 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. *The 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 nonorganizational 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. *The 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. *The 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 (adjusted odds ratio (aOR) = 1.26, b = 0.228, p = .000). Having a parent born outside of the United States was associated with an increased likelihood of being a member of the low intersected identity class (aOR = 1.04, b = 0.040, p = .004) and the high religiosity class (aOR = 1.07, b = 0.066, p = .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 the high religiosity class (aOR = 1.06, b = 0.054, p = .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 = .03). Mother's education and household income were also associated with decreasing the probability of sexual initiation. Collectively, ethnicity, household income, mother's

TABLE 1
Model Fit Indices for One- Through Six-Class Solutions

Number of latent classes	AIC	BIC	n-adjusted BIC	Lo–Mendell–Rubin test, p-value	Entropy
One class	26,927.148	26,998.055	26,953.586	NA	NA
Two classes	24,352.300	24,499.178	24,407.064	.4116	.858
Three classes	22,929.059	23,151.908	23,012.149	.7582	.861
Four classes	22,040.437	22,339.257	22,151.853	.7602	.880
Five classes	21,213.274	21,588.066	21,353.016	.7647	.886
Six classes	21,709.009	22,599.772	22,477.078	.7781	.885

Notes. 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%) Mean (SD)	Class 2: High intersected identity (n = 404; 35%) Mean (SD)	Class 3: High racial identity (n = 199; 17%) Mean (SD)	Class 4: High religiosity (n = 318; 27%) Mean (SD)
Organizational religious participation	−1.084 (.159)	0.581 (.159)	−1.457 (.193)	2.116 (.218)
Religious support	−1.198 (.131)	0.482 (.129)	−1.060 (.167)	2.163 (.303)
Nonorganizational religious participation	−1.266 (.173)	1.040 (.268)	−1.811 (.288)	2.887 (.314)
Subjective religiosity	−1.188 (.170)	0.764 (.235)	−1.180 (.145)	3.093 (.342)
Racial centrality	−0.643 (.097)	0.591 (.153)	0.808 (.147)	−0.077 (.094)
Racial public regard	−0.552 (.087)	0.944 (.223)	2.109 (.247)	−0.038 (.114)
Racial private regard	−0.320 (.098)	0.124 (.090)	0.232 (.125)	0.191 (.098)

Notes. 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.

education, parent nativity, age, and latent profile membership explained approximately 19% of the variation in sexual initiation (R^2 = .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 United States (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
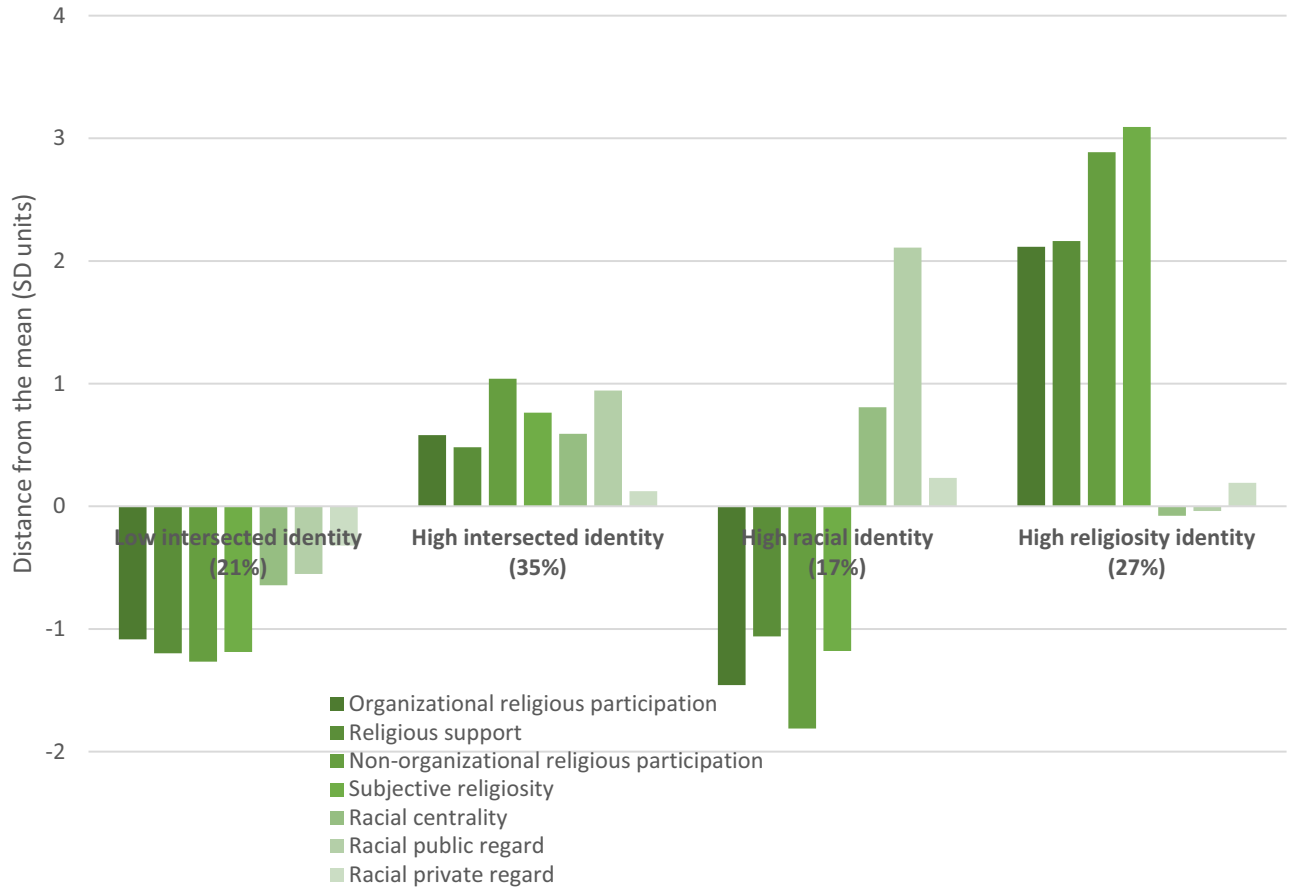
FIGURE 1   Standardized mean values of religiosity and racial identity variables by religiosity–racial identity profile. Values were standardized to aid interpretability.

TABLE 3
Sexual Initiation Regressed on Religiosity–Racial Identity Profile

Variable	Parameter estimate (SD)	Hazard ratios
Low intersected identity	−.037 (.128)	0.964
High intersected identity (ref)	−	−
High racial identity	.012 (.121)	1.102
High religiosity	−.378 (.171)	0.685*

*$p < .05$.

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., nonorganizational 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 United States 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, although 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 subscales 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., intragroup variability to study racial sexual health disparities, and interrelatedness of religiosity and racial identity) and a methodological approach (i.e., LPA). To the best of 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 using additional variables to constitute latent profiles that demonstrate independent effects on sexual initiation.

REFERENCES

Asparouhov, T., & Muthén, B. (2010). Bayesian analysis using Mplus: Technical implementation, version 3. Retrieved December 10, 2016, from www.statmodel.com

Beadnell, B., Stielstra, S., Baker, S., Morrison, D., Knox, K., Gutierrez, L., & Doyle, A. (2003). Ethnic identity and sexual risk-taking among African-American women enrolled in an HIV/STD prevention intervention. *Psychology, Health and Medicine*, 8(2), 187–198. https://doi.org/10.1080/1354850031000087564

Bowleg, L. (2012). The problem with the phrase women and minorities: Intersectionality—An important theoretical framework for public health. *American Journal of Public Health*, 102, 1267–1273. https://doi.org/10.2105/AJPH.2012.300750

Brega, A. G., & Coleman, L. M. (1999). Effects of religiosity and racial socialization on subjective stigmatization in African-American adolescents. *Journal of Adolescence*, 22, 223–242. https://doi.org/10.1006/jado.1999.0213

Brook, J. S., & Pahl, K. (2005). The protective role of ethnic and racial identity and aspects of an Africentric orientation against drug use among African American young adults. *Journal of Genetic Psychology*, 166, 329–345. https://doi.org/10.3200/GNTP.166.3.329-345

Butler-Barnes, S. T., Williams, T. T., & Chavous, T. M. (2012). Racial pride and religiosity among African American boys: Implications for academic motivation and achievement. *Journal of Youth and Adolescence*, 41, 486–498. https://doi.org/10.1007/s10964-011-9675-1

Caldwell, C. H., Wright, J. C., Zimmerman, M. A., Walsemann, K. M., Williams, D., & Isichei, P. A. (2004). Enhancing adolescent health behaviors through strengthening non-resident father–son relationships: A model for intervention with African-American families. *Health Education Research*, 19, 644–656. https://doi.org/10.1093/her/cyg078

Campbell, M., Hudson, M., Resnicow, K., Blakeney, N., Paxton, A., & Baskin, M. (2007). Church-based health promotion interventions: Evidence and lessons learned. *Annual Review of Public Health*, 28, 213–234. https://doi.org/10.1146/annurev.publhealth.28.021406.144016

Celeux, G., & Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. *Journal of Classification*, 13(2), 195–212. https://doi.org/10.1007/BF01246098

Centers for Disease Control and Prevention (CDC). (2014). *HIV among youth*. Retrieved March 8, 2017, from http://www.cdc.gov/hiv/group/age/youth/index.html

Collins, L. M., & Lanza, S. T. (2013). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. Hoboken, NJ: Wiley.

Collins, P. H. (2002). *Black feminist thought: Knowledge, consciousness, and the politics of empowerment*. New York, NY: Routledge.

Cone, J. H. (2008). *Black theology and Black power*. Maryknoll, NY: Orbis Books.

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum*, 1989, Article 8. Retrieved from https://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

Crosby, R., Geter, A., Ricks, J., Jones, J., & Salazar, L. F. (2015). Developmental investigation of age at sexual debut and subsequent sexual risk behaviours: A study of high-risk young Black males. *Sexual Health*, 12, 390–396. https://doi.org/10.1071/SH14074.

Cudeck, R., & Henly, S. J. (2003). A realistic perspective on pattern representation in growth data: Comment on Bauer and Curran (2003). *Psychological Methods*, 8, 378–383. https://doi.org/10.1037/1082-989X.8.3.378

Davenport, L. D. (2016). The role of gender, class, and religion in biracial Americans' racial labeling decisions. *American Sociological Review*, 81, 57–84. https://doi.org/10.1177/0003122415623286

Dean, H. D., & Fenton, K. A. (2010). *Addressing social determinants of health in the prevention and control of HIV/AIDS, viral hepatitis, sexually transmitted infections, and tuberculosis*. Los Angeles, CA: Sage Publications.

DiClemente, R. J., Salazar, L. F., & Crosby, R. A. (2007). A review of STD/HIV preventive interventions for adolescents: Sustaining effects using an ecological approach. *Journal of Pediatric Psychology*, 32, 888–906. https://doi.org/10.1093/jpepsy/jsm056

Donelson, E. (1999). Psychology of religion and adolescents in the United States: Past to present. *Journal of Adolescence*, 22, 187–204. https://doi.org/10.1006/jado.1999.0212

Edwards, K. L. (2008). Bring race to the center: The importance of race in racially diverse religious organizations. *Journal for the Scientific Study of Religion*, 47(1), 5–9. https://doi.org/10.1111/j.1468-5906.2008.00387.x

Emerson, M. O., Korver-Glenn, E., & Douds, K. W. (2015). Studying race and religion: A critical assessment. *Sociology of Race and Ethnicity*, 1(3), 349–359. https://doi.org/10.1177/2332649215584759

Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. *Annual Review of Public Health*, 26, 399–419. https://doi.org/10.1146/annurev.publhealth.26.021304.144357

Goggin, K., Malcarne, V. L., Murray, T. S., Metcalf, K. A., & Wallston, K. A. (2007). Do religious and control cognitions predict risky behavior? II. Development and validation of the Sexual Risk Behavior-Related God Locus of Control Scale for Adolescents (SexGLOC-A). *Cognitive Therapy and Research*, 31(1), 123–139. https://doi.org/10.1007/s10608-006-9090-1

Gonçalves, H., Soares, A. L. G., Bierhals, I. O., Machado, A. K., Fernandes, M. P., Hirschmann, R., ... Menezes, A. M. (2017). Age of sexual initiation and depression in adolescents: Data from the 1993 Pelotas (Brazil) Birth Cohort. *Journal of Affective Disorders*, 221, 259–266. https://doi.org/10.1016/j.jad.2017.06.033

Hayward, R. D., & Krause, N. (2015). Religion and strategies for coping with racial discrimination among African Americans and Caribbean Blacks. *International Journal of Stress Management*, 22(1), 70–91. https://doi.org/10.1037/a0038637

Heeringa, S. G., Wagner, J., Torres, M., Duan, N., Adams, T., & Berglund, P. A. (2004). Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *International Journal of Methods in Psychiatric Research*, 13(4), 221–240. https://doi.org/10.1002/(ISSN)1557-0657

Husain, A. (2017). Retrieving the religion in racialization: A critical review. *Sociology Compass*, 11(9), 1–8. https://doi.org/10.1111/soc4.12507

Idler, E. L. (2014). *Religion as a social determinant of public health*. New York, NY: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199362202.001.0001

Jackson, J., & Gurin, G. (1987). *National survey of Black Americans, 1979–1980*. Ann Arbor, MI: Inter-University Consortium for Political and Social Research. https://doi.org/10.3886/ICPSR08512.v1

Jackson, J. S., Torres, M., Caldwell, C. H., Neighbors, H. W., Nesse, R. M., Taylor, R. J., ... Williams, D. R. (2004). The National Survey of American Life: A study of racial, ethnic and cultural influences on mental disorders and mental health. *International Journal of Methods in Psychiatric Research*, 13(4), 196–207. https://doi.org/10.1002/(ISSN)1557-0657

Kaestle, C. E., Halpern, C. T., Miller, W. C., & Ford, C. A. (2005). Young age at first sexual intercourse and sexually transmitted infections in adolescents and young adults. *American Journal of Epidemiology*, 161, 774–780. https://doi.org/10.1093/aje/kwi095

Lammers, C., Ireland, M., Resnick, M., & Blum, R. (2000). Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health*, 26(1), 42–48. https://doi.org/10.1016/S1054-139X(99)00041-5

Lightfoot, A. F., Taggart, T., Woods-Jaeger, B. A., Riggins, L., Jackson, M. R. & Eng, E., (2014). Where is the faith? Using a CBPR approach to propose adaptations to an evidence-based HIV prevention intervention for adolescents in African American faith settings. *Journal of Religion and Health*, 53, 1223–1235. https://doi.org/10.1007/s10943-014-9846-y

Mattis, J. S., & Grayman-Simpson, N. (2013). Faith and the sacred in African American life. In: K. I. Pargament, J. J. Exline, J. W. Jones (Eds.), *Handbook of religion, spirituality, and psychology*; (Vol. 1. Context, theory, and research. pp. 547–564). Washington, DC: American Psychological Association.

McCree, D. H., Wingood, G. M., DiClemente, R., Davies, S., & Harrington, K. F. (2003). Religiosity and risky sexual behavior in African-American adolescent females. *Journal of Adolescent Health*, 33(1), 2–8. https://doi.org/10.1016/S1054-139X(02)00460-3

McRoberts, O. M. (2005). *Streets of glory: Church and community in a black urban neighborhood*. Chicago, IL: The University of Chicago Press.

Miller, L., & Gur, M. (2002). Religiousness and sexual responsibility in adolescent girls. *Journal of Adolescent Health*, 31, 401–406. https://doi.org/10.1016/S1054-139X(02)00403-2

Muthén, L. K., & Muthén, B. O. (2007). *Mplus: Statistical analysis with latent variables*. Los Angeles, CA: Muthén & Muthén.

Nagin, D. S., & Tremblay, R. E. (2005). Developmental trajectory groups: Fact or a useful statistical fiction? *Criminology*, 43, 873–904. https://doi.org/10.1111/j.1745-9125.2005.00026.x

Noar, S. M., Benac, C. N., & Harris, M. S. (2007). Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychological Bulletin*, 133, 673–693. https://doi.org/10.1037/0033-2909.133.4.673

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, 14, 535–569. https://doi.org/10.1080/10705510701575396

Office of Disease Prevention and Health Promotion (2011). *Healthy People 2020*. Washington: U.S. Department of Health and Human Services. Retrieved March 8, 2017, from https://www.healthypeople.gov/2020/topics-objectives/topic/Adolescent-Health/objectives

Ojikutu, B., Nnaji, C., Sithole, J., Schneider, K. L., Higgins-Biddle, M., Cranston, K., & Earls, F. (2013). All Black people are not alike: Differences in HIV testing patterns, knowledge, and experience of stigma between U.S.-born and non-U.S.-born Blacks in Massachusetts. *AIDS Patient Care and STDS*, 27(1), 45–54. https://doi.org/10.1089/apc.2012.0312

Quinn, K., & Dickson-Gomez, J. (2016). Homonegativity, religiosity, and the intersecting identities of young Black men who have sex with men. *AIDS and Behavior*, 20(1), 51–64. https://doi.org/10.1007/s10461-015-1200-1

Rew, L., & Wong, Y. J. (2006). A systematic review of associations among religiosity/spirituality and adolescent health attitudes and behaviors. *Journal of Adolescent Health*, *38*, 433–442. https://doi.org/10.1016/j.jadohealth.2005.02.004

Rivas-Drake, D., Seaton, E. K., Markstrom, C., Quintana, S., Syed, M., Lee, R. M., ... Racial Identity in the 21st Century Study (2014). Ethnic and racial identity in adolescence: Implications for psychosocial, academic, and health outcomes. *Child Development*, *85*, 40–57. https://doi.org/10.1111/cdev.12200 https://doi.org/10.1111/cdev.12200

Salas-Wright, C. P., Vaughn, M. G., Maynard, B. R., Clark, T. T., & Snyder, S. (2017). Public or private religiosity: Which is protective for adolescent substance use and by what pathways? *Youth and Society*, *49*(2), 228–253. https://doi.org/10.1177/0044118X14531603

Salazar, L. F., DiClemente, R. J., Wingood, G. M., Crosby, R. A., Harrington, K., Davies, S., ... Oh, M. K. (2004). Self-concept and adolescents' refusal of unprotected sex: A test of mediating mechanisms among African American girls. *Prevention Science*, *5*(3), 137–149. https://doi.org/10.1023/B:PREV.0000037638.20810.01

Sandfort, T. G., Orr, M., Hirsch, J. S., & Santelli, J. (2008). Long-term health correlates of timing of sexual debut: Results from a national US study. *American Journal of Public Health*, *98*(1), 155–161 https://doi.org/10.2105/AJPH.2006.097444

Sclove, S. L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika*, *52*, 333–343. https://doi.org/10.1007/BF02294360

Sellers, R. M., Chavous, T. M., & Cooke, D. Y. (1998). Racial ideology and racial centrality as predictors of African American college students' academic performance. *Journal of Black Psychology*, *24*(1), 8–27. https://doi.org/10.1177/00957984980241002

Sellers, R. M., Rowley, S. A., Chavous, T. M., Shelton, J. N., & Smith, M. A. (1997). Multidimensional Inventory of Black Identity: A preliminary investigation of reliability and construct validity. *Journal of Personality and Social Psychology*, *73*, 805–815. https://doi.org/10.1037/0022-3514.73.4.805

Sellers, R. M., & Shelton, J. N. (2003). The role of racial identity in perceived racial discrimination. *Journal of Personality and Social Psychology*, *84*, 1079–1092. https://doi.org/10.1037/0022-3514.84.5.1079

Sinha, J. W., Cnaan, R. A., & Gelles, R. J. (2007). Adolescent risk behaviors and religion: Findings from a national study. *Journal of Adolescence*, *30*, 231–249. https://doi.org/10.1016/j.adolescence.2006.02.005

Smith, C., & Denton, M. L. (2005). *Soul searching: The religious and spiritual lives of American teenagers*. Oxford, UK: Oxford University Press. https://doi.org/10.1093/019518095X.001.0001

Stets, J. E., & Serpe, R. T. (2013). Identity theory. In J. DeLamater & A. Ward (Eds.), *Handbook of social psychology* (pp. 31–60). New York, NY: Kluwer-Plenum. https://doi.org/10.1007/978-94-007-6772-0

Stevenson, H. C., Jr. (1997). Missed, dissed, and pissed: Making meaning of neighborhood risk, fear and anger management in urban black youth. *Cultural Diversity and Mental Health*, *3*(1), 37–52. https://doi.org/10.1037/1099-9809.3.1.37

Taggart, T., Gottfredson, N., Powell, W., Ennett, S., Chatters, L. M., Carter-Edwards, L., & Eng, E. (2018). The role of religious socialization and religiosity in African American and Caribbean Black adolescents' sexual initiation. *Journal of Religion and Health*. Advance online publication.

Taylor, R. J., Chatters, L. M., & Joe, S. (2011). Non-organizational religious participation, subjective religiosity, and spirituality among older African Americans and Black Caribbeans. *Journal of Religion and Health*, *50*, 623–645. https://doi.org/10.1007/s10943-009-9292-4

Taylor, R. J., Chatters, L. M., & Levin, J. (2003). *Religion in the lives of African Americans: Social, psychological, and health perspectives*. Thousand Oaks, CA: Sage Publications.

Uecker, J. E. (2008). Religion, pledging, and the premarital sexual behavior of married young adults. *Journal of Marriage and Family*, *70*, 728–744. https://doi.org/10.1111/j.1741-3737.2008.00517.x

Yonker, J. E., Schnabelrauch, C. A., & DeHaan, L. G. (2012). The relationship between spirituality and religiosity on psychological outcomes in adolescents and emerging adults: A meta-analytic review. *Journal of Adolescence*, *35*, 299–314. https://doi.org/10.1016/j.adolescence.2011.08.010.

Ysseldyk, R., Matheson, K., & Anisman, H. (2010). Religiosity as identity: Toward an understanding of religion from a social identity perspective. *Personality and Social Psychology Review*, *14*(1), 60–71. https://doi.org/10.1177/1088868309349693

Zaleski, E. H., & Schiaffino, K. M. (2000). Religiosity and sexual risk-taking behavior during the transition to college. *Journal of Adolescence*, *23*, 223–227. https://doi.org/10.1006/jado.2000.0309

Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. National survey of American life adolescent sample characteristics, $N = 1,170$ African American and Caribbean Black adolescents.