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A Latent Class Analysis of Behavioral and Psychosocial Dimensions of Adolescent Sexuality: Exploring Race Differences

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Abstract

Adolescent sexuality is a multidimensional concept involving sexual behavior as well as aspects of youths' sexual self-concept and sexual socialization. The current study uses latent class analysis (LCA) to examine patterns of adolescent sexuality, with data from a nationally representative sample of youth (Add Health; $n = 13,447$), incorporating information on behavioral and psychosocial dimensions of adolescent sexual experiences. LCA results highlight that youth may exhibit similar sexual behaviors but vary on psychosocial dimensions, including sexual self-efficacy, knowledge, and views about sex. Sociodemographic characteristics, family factors, mental health, and substance use emerge as predictors of membership into different latent classes of sexuality. Given persistent racial differences in sexual outcomes and sexually transmitted infection (STI) rates, the current study also examines how adolescent patterns of sexuality may help to mediate racial differences in sexual outcomes by young adulthood. Results suggest that racial differences in adolescent patterns of sexuality help to mediate racial differences in the number of sexual partners by young adulthood but not differences in STI diagnosis. Findings highlight the need for research on multiple aspects of adolescent sexuality to understand linkages with later outcomes and group differences.

Keywords

adolescence; childhood, adolescence, adolescent sexuality; ethnic/minority issues; STDs; quantitative/statistical/survey

Sexuality is a normative component of adolescent development and identity formation (Diamond & Savin-Williams, 2009; Tolman & McClelland, 2011). The developmental nature of sexuality means that later sexual outcomes in adulthood are rooted in earlier adolescent sexual experiences. Adolescent sexuality is a multidimensional construct, which includes sexual behaviors, sexual self-concept, and sexual socialization (Tolman & McClelland, 2011).¹ Therefore, to better understand later sexual outcomes and risk, we must consider multiple dimensions of adolescent sexuality and their intersection. Examining the link between a multidimensional conceptualization of adolescent sexuality and later sexual behaviors would also enable us to better understand group differences in these outcomes.

¹I recognize that there are myriad ways that the term sexuality can be conceptualized and measured, including a focus on sexual orientation and attractions. While sexual orientation is an important component of a person's sexual self-concept as well as their behaviors (Graber & Archibald, 2001), the current study does not explicitly examine sexual orientation.

One group difference that has been the interest of scholars and practitioners are racial differences in sexually-transmitted infections (STIs). Despite considerable evidence that Blacks have higher rates of STIs than other racial groups (CDC, 2015), prior studies have not been able to explain this race gap by examining differences in risky sexual behaviors alone (e.g. Ellen, Aral, & Madger, 1998). A multidimensional conceptualization of adolescent sexuality may help us develop a better understanding of such racial differences in sexual outcomes and risk.

The current study uses a person-centered approach to examine patterns of multiple dimensions of adolescent sexuality, including sexual beliefs/values, knowledge, self-efficacy, activity, timing, condom use, and co-occurrences in behaviors, to identify latent profiles of adolescent sexuality. Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), I estimate the prevalence of different profiles of adolescent sexuality, the sociodemographic predictors of these latent classes, and the association between adolescent class membership and later sexual outcomes in young adulthood.

Background

Adolescent Sexual Development

During adolescence youth experience shifts in their interpersonal relationships and increases in romantic relationship involvement (Collins, Welsh, & Furman, 2009). Youth also begin to engage in sexual activity, with the majority of American teens engaging in sexual intercourse before the age of 18 (Zimmer-Gembeck & Helfand, 2008). While the timing and sequencing of engagement in different sexual activities may vary (Haydon, Herring, Prinstein, & Halpern, 2012b), all youth (to some extent) must navigate this shifting landscape in which they are socialized about sexuality and develop a sense of sexual self-concept.

During adolescence teens are engaged in *sexual socialization*, the process through which they acquire knowledge about sexuality and sexual behavior and develop a sense of the normative expectations of significant others, peers and parents, regarding sex. Sexual socialization, therefore, includes both an adolescents' knowledge about sex as well their views on the attitudes and expectations of significant agents of socialization (parents and peers) about sex. Findings from the literature have linked teen's knowledge as well as expectations of parental and peer attitudes about sex with behavioral outcomes, including sexual initiation (Dittus & Jaccard, 2000), condom use (Kirby, 2002), and STI infection (Ford et al., 2005).

Sexual self-concept encompasses the positive and negative perceptions that individuals have about themselves as sexual actors, including their attitudes, values, desires, and identity (Best & Fortenberry, 2013). Adolescents' perceptions of their personal benefits of engaging in sexual behavior, as well as their sense of self-efficacy within sexual contexts, comprise two important dimensions of adolescents' developing sexual self-concept. These components help to structure and motivate sexual behavior, with research linking aspects of sexual self-concept, such as sexual self-efficacy (Bengel, Belz-merk, & Farin, 1996; Longmore, Manning, Giordano, & Rudolph, 2003) and attitudes regarding sex (Basen-Engquist & Parcel, 1992; Kirby, 2002), with engagement in sexual behavior. Dimensions of sexual

socialization and sexual self-concept therefore may act as interrelated determinants of later health and sexual behavior, promoting or constraining behavioral choices through psychological and social processes (Buhi & Goodson, 2007). The current study examines how these dimensions of sexuality are interrelated with components of concurrent sexual behavior in adolescence and how these patterns of sexuality and sexual behavior are linked with future sexual outcomes in young adulthood (number of sexual partners and STI infection).

Latent class analysis (LCA) is a useful methodology for capturing the multidimensional nature of adolescent sexuality and the underlying patterns of adolescent sexual behavior. This person-centered approach captures the co-occurrence of behaviors and how co-occurrences are grouped among individuals or groups of individuals. This statistical method identifies unobserved subgroups within populations based on observed indicators using heuristic methods and fit indices to determine the optimal number of latent classes (Collins & Lanza, 2010). Prior research utilizing a latent class analysis framework to capture profiles of adolescent sexuality have tended to focus explicitly on behaviors (Beadnell et al., 2005; Haydon, et al., 2012b; Haydon, Herring, & Halpern, 2012a; Vasilenko, Kugler, Butera, & Lanza, 2015a) or consider the co-occurrence of sexual behavior along with other dimensions of risk behavior, such as substance use and delinquency (Halpern et al., 2004; Hair, Park, Ling, & Moore, 2009). This research suggests that among adolescents, patterns of low- and high-risk sexual behaviors emerge. However, this research does not consider how psychosocial aspects of sexuality might also co-occur with behaviors and lead to different patterns of experiences. The current study extends prior research by using a latent class analysis approach to examine the patterns of behavioral and psychosocial characteristics of sexuality simultaneously.

Enduring Impact of Adolescent Sexuality Development

Prior research highlights the developmental link between adolescent sexual experiences and later sexual behavior in young adulthood. Patterns of sexual behavior during adolescence may have long-term consequences for later behavior and sexual health (Fergus, Zimmerman, & Caldwell, 2007). For example, earlier ages at sexual initiation have been linked with higher rates of STI infection in young adulthood (Kaestle, Halpern, Miller, & Ford, 2005), a higher number of sexual partners (Sandfort, Orr, Hirsch, & Santelli, 2008), and greater involvement in risky sexual behavior over time (Epstein, Bailey, Manhart, Hill, & Hawkins, 2014). Patterns of contraceptive use established during adolescence may also help to explain later risk of STI infection (Shafii, Stovel, & Holmes, 2007). Engagement in “risky” sexual practices during adolescence, such as the co-occurrence of alcohol and substance use with sexual activity, may inhibit decision making, contribute to inconsistent condom use, and increase the risk of STI infection in young adulthood (Halpern-Felsher, Millstein, & Ellen, 1996; Tapert, Aarons, Sedlar, & Brown, 2001). Research using cluster or latent-class analysis find that adolescents who engaged in riskier patterns of sexual behavior involving earlier sexual initiation, multiple partnerships and inconsistent condom use, had higher rates of STI infection during adolescence (Halpern et al., 2004) and in young adulthood (Vasilenko et al., 2015a).

Extant research also highlights the importance of several psychosocial factors for sexual outcomes, including sexual knowledge, sexual self-efficacy, and views about sex. For instance, some adolescents lack accurate knowledge about sexual behavior and contraceptives, which may contribute to engagement in riskier sexual practices, such as inconsistent condom use (Kirby, 2002). Further, adolescent self-efficacy regarding contraceptive use and sexual control is also highly predictive of intended and actual condom use (Longmore et al., 2003) with general sexual self-efficacy predictive of risky sexual behavior (Bengel, et al., 1996). This research suggests that the development of sexual self-efficacy may impact later risk of contracting STIs through its impact on sexual decision-making and contraceptive use. Views about sex have also been linked with sexual outcomes, with adolescents' perceptions of parental disapproval of sex associated with a reduced likelihood of engaging in sexual intercourse (Dittus & Jaccard, 2000) and a lower likelihood of STI infection in early adulthood (Ford et al., 2005).

Beyond the individual predictive power of psychosocial components of sexuality for sexual behavior, it is important to consider how these psychosocial factors co-occur with behavior during adolescence to form patterns of adolescent sexual experiences. Differences in attitudes and knowledge about sex, as well as sexual self-efficacy, may help to differentiate individuals beyond their behavior. For example, two teens who are both sexually active, having initiated sex at similar ages, may vary on the amount of knowledge they have about sex or how positively they perceive sex. Viewing sex more positively might increase the number of sexual partners a person has over time. Viewing sex positively, while knowing little about sex and contraceptives, might increase the likelihood of engagement in unprotected sex, and therefore increase the risk of sexually transmitted infections. Conversely, viewing sex positively but possessing a high degree of knowledge about sex along with a sense of self-efficacy to use contraceptives in sexual situations might be associated with a greater number of sexual partners over time, but such sexual relations might not be as risky, with more communication with sexual partners about sex and STIs and greater use of contraceptives. Therefore, variation in psychosocial facets of sexuality might help to explain why individuals would engage in riskier behavior over time, which would increase the risk of later STI infection. Understanding how patterns of psychosocial components of sexuality, such as sexual knowledge, views about sex, and sexual self-efficacy, coexist with behavior during adolescence might provide insight into the manifestation of behavior later on in adulthood (e.g. communication with partners about sex and STIs, number of sexual partners, etc). Therefore, psychosocial components of sexuality may help to moderate the association between earlier behavior and later behavior/outcomes. Psychosocial factors might shape the nature and way in which sexual behavior manifests over time, thereby making such behavior more or less risky. Whether group differences exist in these patterns of psychosocial and behavioral aspects of sexuality remains to be seen.

Racial and Ethnic Differences in Sexual Development

With increases in sexual activity during adolescence, the risk of contracting sexually-transmitted infections (STIs) also increases. Compared with older adults, youth between the ages of 15 and 24 are at significantly higher risk for acquiring STIs and account for half of all new STI cases each year (Satterwhite et al., 2013). The burden of STIs is not even across

racial and ethnic groups, however, with research consistently finding higher rates of STI infection among African American, Native American, and Hispanic youth compared to their Non-Hispanic White peers (CDC, 2015). Differences in risky sexual behavior, however, do not entirely explain these racial disparities in STI rates (Eitle, Greene, & Eitle, 2015; Ellen et al., 1998; Hallfors, Iritani, Miller, & Bauer, 2007). Some research suggests that larger contextual factors may help to elucidate the persistence of such disparities. Contextual factors, such as racial segregation, health care, and the socioeconomic environment, impact the ecological setting in which people live, as well as the nature of sexual networks (Adimora & Schoenbach, 2005; Hogben & Leichter, 2008). This body of literature suggests that racial disparities in STI rates are influenced by larger contextual factors through their influence on the epidemiological context and sexual networks, rather than individual differences in behavior, such as number of sexual partners (Adimora & Schoenbach, 2005; Hogben & Leichter, 2008; Newman & Berman, 2008). While differences in behaviors may exist across different ecological contexts and social networks, different contexts may also shape the development and transmission of psychosocial components of sexuality, such as knowledge, views about sex, and self-efficacy.

Psychosocial components of sexuality, including sexual socialization and self-concept, may be influenced by the larger social context and networks in which individuals are embedded and therefore significant variation in these aspects of sexuality may exist across racial and ethnic groups. Sexual socialization, including the perceived attitudes of others and knowledge about sex, is embedded within the social context in which people live, including their social networks and access to information through sex education. Racial differences in the socialization context, such as access to sex education (Kohler, Manhart, & Lafferty, 2008) and parental communication about sex (Meneses, Orrell-Valente, Guendelman, Oman, & Irwin, 2006), may contribute to variation in how teens are socialized to think about sex and contraceptives. Prior research suggests that attitudes and knowledge about contraceptive methods vary across race, with less knowledge about contraceptives and more fatalistic views about pregnancy among non-Whites (Rocca & Harper, 2012). An individual's sexual self-concept, including their sense of sexual self-efficacy and attitudes regarding sex, is also influenced by their social context as well as their psychological well-being. For example, self-efficacy is developed in part through observations of "models" within one's social context and is impacted by one's sense of self, including their self-esteem and mastery (Stetcher, McEvoy, Becker, & Rosenstock, 1986). Research finds that adolescents with high levels of psychological distress are more likely to report low levels of sexual self-efficacy (Lee, Salman, & Fitzpatrick, 2009; Seth, Raija, DiClemente, Wingood, & Rose, 2009). Furthermore, research suggests that low sexual self-efficacy helps to partially explain the linkage between psychological distress and engagement in risky sexual behavior (Alvy et al., 2011). Therefore, psychological distress may negatively impact the development of sexual self-efficacy in ways that may impact later sexual behavior and outcomes. Research finds that minority youth largely report more psychological distress compared to their non-Hispanic White peers (Williams, Yu, & Jackson, 1997). Racial differences in social context as well as psychological well-being therefore may contribute to differences in the development of psychosocial components of sexuality (e.g. sexual knowledge, views about

sex, and sexual self-efficacy), in ways that lead to later differences in sexual behavior and STI outcomes.

In addition to race and ethnicity, prior research points to several other sociodemographic characteristics as influential for adolescent sexual experiences. Gender is an important organizing factor in the lives of adolescents, with research pointing to significant gender differences in several aspects of sexuality including: age at first intercourse, frequency of intercourse and other sexual behaviors, number of sexual partners, attitudes and motivations surrounding sex, and perceptions about the social acceptance of sexual behaviors (Diamond & Savin-Williams, 2009; Oliver & Hyde, 1993). In general, research finds that adolescent boys are more likely to have sexual experience at early ages, have more permissive attitudes about sex, and engage in more sexual activity with more partners, compared to adolescent girls (Diamond & Savin-Williams, 2009). Adolescent men are also more likely to participate in risky sexual behavior than women (Halpern et al, 2004), although women tend to have higher rates of STI infection even after accounting for patterns of sexual behavior (Haydon et al., 2012a; Vasilenko et al., 2015a). Adolescent alcohol and substance use and exposure to peer substance use have been linked with engagement in riskier sexual behaviors and a higher risk of STI infection (Buhi & Goodson, 2007; Halpern et al., 2004; Haydon et al., 2012a). Certain dimensions of mental health may act as risk factors for engagement in riskier sexual behaviors among adolescents, including depression (Shrier, Harris, Sternberg, & Beardslee, 2001) and impulsivity (Kahn, Kaplowitz, Goodman, & Emans, 2002). Closeness with one's parents has been linked with abstention from sex, less engagement in risky sexual behaviors, and use of contraceptives (Dittus & Jaccard, 2000; Kotchick, Shaffer, Forehand, & Miller, 2001). Research finds that youth who grew up in non-intact family households are more likely to initiate sexual behavior at an early age, although these associations are largely explained by differences in exposure to family instability and parent-child relations (Davis & Friel, 2001; Wu & Thomson, 2001). Together these findings suggest that a number of characteristics of individuals and their families may act as risk or protective factors and influence the sexual experiences of adolescents, as well as later sexual outcomes.

The current study extends prior research by using latent class analysis (LCA) to study patterns of adolescent sexual self-concept, socialization, and behaviors using nationally representative data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). First, latent classes of adolescent sexuality are identified. Next, multinomial logistic regression models are estimated to predict membership into latent classes, drawing on theory and prior research to include demographic characteristics as well as social and psychological risk and protective factors linked with adolescent sexuality. Latent class differences in sexual outcomes in young adulthood are examined next (lifetime number of sexual partners and diagnosis of an STI). Finally, I consider whether membership in these latent classes of adolescent sexuality helps to mediate the association between race and sexual outcomes in young adulthood.

Method

Data come from Waves I and IV of the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative school-based survey of youths' health and

social behaviors (Harris et al., 2009). The first wave of data collection took place during the 1994-1995 school year with both an in-school and at-home questionnaire of students in grades 7 through 12. A fourth wave of data collection took place in 2007 and 2008 when the original respondents were between the ages of 24 and 32 ($n = 15,701$). Certain questions on the in-home survey regarding sexual behavior were only asked of youth who were ages 15 or older at Wave I, therefore the analytic sample for analyses examining latent class membership patterns and predictors of class membership was restricted to youth who were fifteen years or older at Wave I, not missing on race, and who had valid sample weights ($n = 13,920$). A small number of respondents who were between the ages of 19 and 21 were also excluded from the sample ($n = 473$) in order to capture a more developmentally similar group of youth between ages 15 and 18, giving us a sample of 13,447 respondents. For analyses examining the longitudinal association between latent class membership in adolescence and sexual outcomes in young adulthood the analytic sample was further restricted to those youth who also participated at Wave IV ($n = 10,415$). Supplementary attrition analyses were conducted to test for differences between respondents who were interviewed at Wave IV, and those who were lost at follow up. Individuals who participated in the Wave IV interview were younger, less likely to be Asian or Hispanic (vs White, Black, or American Indian), marginally less likely to be in a stepfamily (vs intact family), had less positive views of the benefits of sex, and reported greater knowledge about sex, compared to those individuals who only participated in the Wave I interview ($n = 3,032$). In order to ensure that the sample of youth was representative of all adolescents and their sexual experiences, the full sample of respondents who were interviewed at Wave I were retained when predicting latent class membership.

Measures

Psychosocial and behavioral aspects of adolescent sexuality were captured with six variables: sexual knowledge, sexual self-efficacy, perceptions of the benefits of sex, age at first sexual intercourse, drinking/drug use during sex, and never using a condom during sex. These six variables, measured at Wave I, help to capture dimensions of sexual self-concept, sexual socialization, and sexual behavior among adolescents ages 15-18. They are used as indicators of latent classes of adolescent sexuality. Descriptive information on these indicators are presented in Table 2.

Sexual knowledge was assessed using a ten item knowledge quiz which counted the number of correct answers respondents gave to a series of questions about reproduction, contraceptives, and STI risk. This count index was standardized to have a mean of zero and standard deviation of one so that respondents' scores were scaled to the average knowledge of adolescents in the sample. This measure captures one aspect of youths' sexual socialization.

Sexual self-efficacy was a scale of three items which tapped into adolescents' sense of confidence and control in sexual situations to use birth control. Respondents were asked to rate how sure they would be, for example, "that you could plan ahead and have some form of birth control available" (1 "very unsure" to 5 "very sure"; 0 "never wanted to use birth control"). Items were averaged into a scale, with higher scores indicating a higher degree of

sexual self-efficacy, and standardized to have a mean of zero and standard deviation of one ($\alpha = 0.62$).

An adolescent's *perception of the benefits of sex* was measured with eight items which tapped into adolescents' views about their personal benefits for engaging in sexual intercourse as well as the social reactions to their sexual activity. This scale therefore captures dimensions of both sexual self-concept as well as sexual socialization. Respondents were asked on a scale of one to five how much they agreed or disagreed (1 = strongly disagree to 5 = strongly agree) that, for example, if they had sexual intercourse: their friends would respect them more, afterward they would feel guilty, it would upset their mother, and it would make them more attractive to the opposite sex. These eight items were averaged into a scale with higher values indicated more positive perceptions of the benefits of engaging in sexual intercourse and a lower sense of the social costs involved ($\alpha = 0.73$). This scale was standardized to have a mean of zero and standard deviation of one.

Three variables captured the sexual behavior of adolescent respondents: *age at first sex*, *drinking/drug use during sex*, and *never using a condom during sex*. Questions on whether the respondent had ever reported having had sexual intercourse (defined as penile-vaginal intercourse) and the age when they first had sex were used to create a categorical variable of *age at first sex* (1 “never had sex”, 2 “first sex before age 15”, 3 “first sex, age 15+”). Two dichotomous indicators were also included to capture respondents engagement in risky sexual behavior (0 = no, 1 = yes); reporting that they were drunk or on drugs at their most recent or first sexual intercourse, and reporting that they never use a condom during sexual intercourse.

Two sexual outcomes in young adulthood (measured at Wave IV) were examined in the current study, lifetime number of sexual partners and lifetime STI diagnosis, similar to other studies examining the link between adolescent sexual/romantic behavior and sexual outcomes in young adulthood (Vasilenko, Kugler, & Lanza, 2015b). *Lifetime number of sexual partners* captures the number sexual partners respondents reported having had vaginal intercourse with in his or her lifetime (range 0 – 995, mean = 12.01). Given the large positive skew, the natural log of this variable was taken (Shafii, et al., 2007). A dichotomous measure of *lifetime STI diagnosis* indicated whether respondents had ever been told by a health professional that they had any of fourteen sexually transmitted diseases (e.g. chlamydia, gonorrhea, syphilis, genital herpes, HIV, etc; 23.0%).

Several sociodemographic characteristics have been linked with adolescent sexual behavior in prior research, and therefore act as predictors of latent class membership as well as controls in analyses predicting sexual outcomes at Wave IV. All variables were measured at Wave I. The *gender* of respondents was coded with 0 for males and 1 for females and the *age* of the respondent at Wave 1 was measured in years (range 15-18). *Race/ethnicity* was measured with five categories (1 “Non-Hispanic White”, 2 “Non-Hispanic Black”, 3 “Non-Hispanic Asian”, 4 “American Indian”, and 5 “Hispanic”) using information from respondents self-nominations of their primary racial identity and Hispanic ethnicity. Information from the household roster at Wave I was used to capture the adolescents' *family structure* growing up with four categories: 1 “biological married parents”, 2 “married

stepfamily”, 3 “single parent family”, 4 “other family form”. Eight questions were used to create a scale of the highest level of *parental closeness* adolescents had with their available parents; this scale was then standardized. Respondents were asked how close they felt to their resident mother/father and how much they felt he/she cared about them (1 = not at all to 5 = very much), as well as how much they agreed or disagreed (1 = strongly disagree to 5 = strongly agree) that their mother/father is warm and loving, they are satisfied with the way they communicate with their mother/father, and they are satisfied with their relationship overall (mom alpha = 0.84, dad alpha = 0.88). These items were averaged into a scale for each parent, with the highest value of all available parents taken as the value for parental closeness.

Dimensions of adolescents' mental health and their substance use behavior were also included as predictors of adolescent sexuality and sexual outcomes in young adulthood. *Depressive symptomology* was captured using 19-items from the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) which were averaged into a scale (alpha = 0.87). These questions asked respondents how often in the past week they, for example, felt sad, were depressed, and felt disliked by others (0 “rarely or never” to 3 “most or all of the time”). *Impulsivity* was measured with four items, averaged into a scale, which tapped into the respondent's problem-solving abilities; higher scores indicated greater impulsivity and poorer planning skills (alpha = 0.74). These questions asked adolescents how much they agree or disagreed that, for example, “when making decisions, they generally use a systematic method for judging and comparing alternatives” (1 = strongly agree to 5 = strongly disagree). These scales were both standardized to have a mean of zero and a standard deviation of one. Adolescent substance use was captured with three items measuring youth's *cigarette smoking*, *marijuana use*, and *binge drinking*. Respondents were asked, during the past month, how many cigarettes they smoked each day (range 0 - 95) and how many times they used marijuana (range 0 – 40 or more). Binge drinking was measured as the number of days in the past year respondents drank five or more drinks in a row (range 0 - 365). *Peer substance use* was captured with an index of three questions in which respondents were asked how many of their three best friends smoked at least one cigarette a day, drank alcohol at least once per month, and used marijuana at least once per month. Responses to these three questions were summarized to create an index of peer substance use (range 0 – 9).

Analysis

Data analysis was conducted using Mplus version 7 (Muthén & Muthén, 2012). Full-information maximum-likelihood estimation was used to handle missing data. This approach reduces missing data bias by using all available data in parameter estimation (Enders & Bandalos, 2001). Results are based on weighted data, and adjustments were made to the standard errors to account for clustering and stratification in the Add Health sampling design.

Results

The Latent Classes

Using the six measures of adolescent sexuality, solutions with two, three, four, five, six, and seven latent classes were estimated, with four measures used to determine the best solution. Simulation studies help to establish “best practices” in determining latent class solutions and suggest that both information criteria (the Bayesian Information Criterion (BIC), the sample size adjusted Bayesian Information Criterion (SABIC)) and likelihood-based tests (Lo-Mendell Rubin) should be considered in conjunction with one another to help determine the optimal solution to latent class analyses (Nyland, Asparouhov, & Muthén, 2007). Entropy is a classification measure rather than one of model fit that gives additional information about the latent class model (Collins & Lanza, 2010).

These four measures indicated that the six class solution fit the data best (see Table 1 comparing fit across model solutions). Entropy was highest for the two class solution, declined steadily and was lowest for the four and five class solutions, increasing slightly for the six and seven class solutions. The two Bayesian measures declined as group number increased and were lowest for the seven class solution, suggesting that this solution was most optimal. The Lo-Mendell Rubin test was significant for the two through six class solutions, indicating that the six class solution was optimal (improving model fit over the five class solution, with no improvement in fit with the seven class solution). Comparing the different models the six class solution was selected, as it significantly improved model fit and had the clearest interpretation. A maximum-probability assignment of the classify-analyze approach was used to assign individuals into the latent class that they had the highest posterior probability of membership (Clogg, 1995).

Descriptive information about the six indicators of adolescent sexuality used to generate the latent classes are presented in Table 2. The first column shows the overall means of the indicators for the full sample of adolescents ($n = 13,447$) and the subsequent columns report means for each of the six latent classes. For the three continuous measures, means based on both the unstandardized and standardized scores are reported to provide a sense of the absolute and relative nature of these indicators. About one-third of the adolescents in Class One (2% of the sample) reported having had sexual intercourse, with seventy percent of the sexually active members of Class One reporting that they initiated sex before the age of 15. This class also reported the lowest level of sexual knowledge compared to the other classes. This class stood out, however, due to its very low level of sexual self-efficacy (over three standard deviations below the sample mean), and therefore this group is labeled *Very Low Sexual Self-efficacy*. Class Two (7% of the sample) was similar to Class One in terms of their low level of sexual self-efficacy (almost two standard deviations below the sample mean). However, this class reported significantly more positive views about sex compared to Class One. Fifty-two percent of Class Two reported being sexually active and also reported engagement in riskier sexual practices, with the second highest reports of never using a condom during sexual intercourse (10%). Given these characteristics, this group is labeled *Interested but Low Sexual Self-efficacy*.

None of the adolescents in Class Three or Class Four reported having had sexual intercourse, but these two classes differed on psychosocial aspects of their sexuality. Adolescents in Class Three (30% of the sample) possessed sexual knowledge that was close to the sample mean, reported above-average sexual self-efficacy, and the lowest perceptions of the benefits of sex among all classes. Given these characteristics, Class Three is labeled *Uninterested, Empowered Virgins*. Class Four (19% of the sample), on the other hand, had the second lowest level of sexual knowledge, a low level of sexual self-efficacy (over half of a standard deviation below the mean), and a higher perception of the benefits of sex compared to the other class of sexual abstainers (Class Three). Class Four is labeled *Unempowered but More Interested Virgins*.

While every adolescent in Class Five and Class Six had had sexual intercourse, these two classes remained distinct on other measures of sexuality. Class Five (13% of the sample) was characterized by riskier sexual behavior. Forty-six percent of Class Five members reported having initiated sex before age 15 (compared to 36% of Class Six), and this class also had the highest percentage of respondents reporting being drunk or on drugs at their first or most recent sexual encounter (16%) as well as the highest percentage reporting that they never use condoms during sex (13%). Teens in Class Five reported average levels of sexual knowledge (but lower than Class Six), a lower level of sexual self-efficacy (over half of a standard deviation below the mean) and the highest perceptions of the benefits of sex compared to all other classes. Given the characteristics of Class Five, this group is labeled *Interested but Unempowered Risky Non-virgins*. Class Six (29% of the sample), on the other hand, reported the most sexual knowledge and highest sexual self-efficacy of all the latent classes, as well as high perceptions of the benefits of sex. This group is labeled *Knowledgeable, Empowered Non-virgins*.

Differences between Latent Classes on Predictor Variables

Table 3 shows the means for all predictor variables by latent class membership as well as the overall sample to facilitate comparisons between classes. Multivariate multinomial logistic regression models predicting latent class membership were employed to test for significant differences in predictor variables between latent classes. Five regression analyses were conducted, rotating the excluded latent class group to provide comparisons between all classes. The final column of Table 3 presents the statistically significant differences between groups based on multivariate results including all predictors.

Upon examination of the results in Table 3, several distinctions emerge between the latent classes. Class Five, the *Interested but Unempowered Risky Non-Virgins*, tended to be more disadvantaged. These adolescents were more likely to come from non-intact family households, more likely to be Black or American Indian, and reported greater personal and peer substance use, compared to many of the other latent classes. Classes 1 and 2, which were largely classified by their low levels of sexual self-efficacy, were also disadvantaged, but stood out for their particularly high levels of depression and higher levels of impulsivity compared to many of the other classes. Class Two, the *Interested but Low Sexual Self-efficacy* group, reported the highest rates of depression and impulsivity, low rates of parental closeness, and high rates of personal and peer drug use. Class One, the *Very Low Sexual*

Self-efficacy group, was also characterized by disadvantage, but in many ways appear slightly better off than Classes Five and Two. These youth were more likely to be female, Black or (especially) Hispanic, had high rates of depression, and engaged in more binge drinking. Class Six, the *Knowledgeable, Empowered Non-Virgins*, were older on average and more likely to be female. This group was more likely to be Black, less likely to be Asian, and more likely to come from a non-intact family household compared to the virgin classes (Class 3 & 4). This group reported similar levels of personal and peer substance use, but significantly lower levels of depression and impulsivity compared to Class 5 (the other non-virgin class) and Class 2 (the low sexual self-efficacy with positive views of sex class).

Classes 3 and 4, the “virgin” classes, appeared distinct in a handful of ways. Class 3, the *Uninterested, Empowered Virgins*, were significantly more likely to be Non-Hispanic White, had low levels of impulsivity and reported the lowest level of depression of all groups. They also reported the highest levels of parental closeness among most groups. On the other hand, Class 4, the *Unempowered but More Interested Virgins*, were more likely to be Asian, with higher rates of depression and impulsivity compared to their Class 3 peers. The virgin classes were more likely to come from intact family households, had similar levels of parental closeness, and lower rates of substance use compared to the sexually active classes (Class 5 and 6) as well as the low sexual self-efficacy classes (Class 1 and 2).

Latent Class Differences in Sexual Outcomes during Young Adulthood

For the next stage of analyses the association between latent class membership regarding sexuality during adolescence and sexual outcomes eight years later during young adulthood were considered. A series of regression analyses with binary indicators representing latent classes were conducted, rotating the reference category to compare differences between all latent classes. Table 4 presents the results of ordinary least squares regression models predicting the logged lifetime number of sexual partners respondents reported by young adulthood while Table 5 presents the results of logistic regression models predicting the likelihood of receiving an STI diagnosis by young adulthood, as this is a dichotomous indicator. In both tables, Class 5 (*Interested but Unempowered Risky Non-virgins*) serves as the reference group, as multinomial logit models suggest this group is most disadvantaged.

With respect to number of sexual partners by young adulthood, adolescents who had *Very Low Sexual Self-efficacy* and were *Interested but Low Sexual Self-efficacy*, as well as the *Uninterested, Empowered Virgins* and *Unempowered but More Interested Virgins* reported significantly fewer sexual partners than the *Interested but Unempowered Risky Non-virgins* (Table 4, Model 1). Individuals in those four groups also reported significantly fewer sexual partners by young adulthood than the *Knowledgeable, Empowered Non-Virgins*. The two virgin classes as well as the *Very Low Sexual Self-efficacy* class also reported significantly fewer sexual partners by young adulthood compared to the class characterized by *Interested but Low Sexual Self-efficacy*. Figure 1 helps to illustrate the differences between latent class groups on the expected number of sexual partners by young adulthood, holding all predictor variables at their mean. Here we see that, controlling for other sociodemographic predictors, individuals in the *Very Low Sexual Self-efficacy* group, the *Uninterested, Empowered Virgins* and the *Unempowered but Interested Virgins* were expected to have had between 5

and 6 sexual partners by young adulthood, while individuals in the *Unempowered Risky Non-Virgin* class were expected to have 9.3 sexual partners on average and those in the *Knowledgeable, Empowered Non-Virgin* class during adolescence were expected to have 9.7 sexual partners by young adulthood. The *Interested but Low Sexual Self-efficacy* group fell in between, with about 7.3 sexual partners on average; suggesting that even when not sexually active in adolescence (about 50% of this group) having a combination of low sexual self-efficacy with positive views about sex is linked with a higher number of sexual partners later in young adulthood.

When considering race in Model two, we see that Non-Hispanic Blacks had significantly more sexual partners (8.7 sexual partners) than non-Hispanic Whites (7.3), Asians (4.8), and Hispanics (5.8). Analyses rotating the reference group suggest that both non-Hispanic Whites and American Indians (7.2 partners) had significantly more sexual partners than Asians and Hispanics, with Hispanics having significantly more sexual partners than Asians. However, when considering both latent class membership and race simultaneously, the race differences in number of sexual partners evident in Model 2 are attenuated and one of these differences is no longer statistically significant (difference between Whites and Blacks, Model 3). To test for the significance of this mediation, a Sobel test of mediation was performed using bootstrapping (Bollen & Stine, 1990; Sobel, 1982). A Sobel test estimates the variance of the combination of parameter estimates to determine the statistical significance of indirect effects by which the association between two variables is mediated through a third. Bootstrapping is a method of resampling used to estimate standard errors and confidence intervals for this test of mediation (Bollen & Stine, 1990; Kline, 2011). Results suggest that racial differences in the number of sexual partners by young adulthood were significantly explained (mediated) by differences in adolescent latent class membership. Controlling for adolescent latent class membership Whites were expected to have 7.4 sexual partners by young adulthood, with 8 partners expected for Blacks, 7.3 partners expected for American Indians, 5.3 partners expected for Asians, and 6.1 partners expected for Hispanics. However, looking at the full multivariate model in Model 5, some of these racial differences in number of sexual partners re-emerge and were again statistically significant, particularly the contrast between Whites and Blacks. Supplementary analyses using stepwise regression models were employed to examine which predictors acted to strengthen the influence of race when they were controlled for, thereby acting as suppressor variables (Smith, Ager, & Williams, 1992). These analyses revealed that personal and peer substance use acted as suppressors of the influence of race on number of sexual partners (Model 4). Results of a Sobel test with bootstrapping indicate that personal and peer substance use significantly mediated the association between race and number of sexual partners in young adulthood. That is, by controlling for race differences in substance use the race differences in number of sexual partners between Whites and Blacks becomes larger, 7 partners versus 9.4 partners respectively. This is largely explained by the lower substance use among Blacks compared to Whites. Together it appears that there are two patterns of mediation at work. While racial differences in the number of sexual partners by young adulthood were explained in part by differences in adolescent latent class sexuality, controlling for differences in adolescent substance use we again see significant differences in the number of sexual partners between Whites and Blacks. However, the explanatory power

of latent class membership remains in the final multivariate model (Model 5) when comparing Non-Hispanic Blacks to Asians (coefficient was significantly reduced by 28%) and Hispanics (coefficient was significantly reduced by 24%).

With respect to the likelihood of receiving an STI diagnosis by young adulthood significant differences emerged between latent classes (Table 5, Model 1) as well as race groups (Table 5, Model 2). However, there was no evidence that racial differences in STI diagnosis were mediated by latent class membership (Model 3). The *Uninterested, Empowered Virgins* and the *Unempowered but More Interested Virgins* were both significantly less likely to receive an STI diagnosis compared to the *Interested but Unempowered Risky Non-virgins*. In models rotating the reference group (not shown), both of these virgin classes, as well as individuals who had *Very Low Sexual Self-efficacy* during adolescence were significantly less likely to receive an STI diagnosis compared to the *Knowledgeable, Empowered Non-Virgins* and the *Interested but Low Sexual Self-efficacy* group. Non-Hispanic Blacks had a significantly higher likelihood of receiving an STI diagnosis compared to all other racial groups (Model 3). Non-Hispanic Whites, Hispanics, and American Indians reported statistically similar likelihoods of receiving an STI diagnosis by young adulthood, while Asians reported the lowest likelihood of receiving an STI diagnosis compared to all other racial groups. These latent class and racial differences in STI diagnosis persisted in models controlling for all other predictors (Model 4). Figure 2 helps to illustrate the differences between latent class groups on the predicted probability of STI diagnosis by young adulthood, holding all other predictors at their mean. Here we see that individuals in the *Interested but Unempowered Risky Non-virgins* and the *Knowledgeable, Empowered Non-Virgins* classes had a 22 to 25% probability of receiving an STI diagnosis by young adulthood. Comparatively, those in the *Very Low Sexual Self-efficacy* group had a 13% probability of an STI diagnosis, and individuals in the *Uninterested, Empowered Virgins* group and the *Unempowered but More Interested Virgins* group had an 18 and 17% probability of receiving an STI diagnosis by young adulthood, respectively. Finally, individuals in the *Interested but Low Sexual Self-efficacy* group had about a 21% probability of receiving an STI diagnosis by young adulthood.

Discussion

Scholarship on adolescent sexuality has largely focused on the behavioral dimensions of adolescent sexual experiences (e.g. Haydon et al., 2012b; Vasilenko et al., 2015a). Yet psychosocial components of adolescent sexuality, such as sexual self-efficacy, sexual knowledge, and views about sex, remain important facets of the adolescent developmental landscape (Kirby, 2002; Longmore et al., 2003). Results from the current study underscore the interrelated nature of behavioral and psychosocial dimensions of adolescent sexuality. Results of latent class analysis indicate that individuals who have similar behavior (e.g. virgins or non-virgins) can differ on psychosocial characteristics in substantively important ways. Individuals may abstain from sexual intercourse but possess more or less knowledge about sex, different perceptions of the benefits of sexual activity, and vary on their degree of sexual self-efficacy or empowerment in sexual decision-making. The same is true for those adolescents who are sexually active. Those individuals who possess more knowledge and have greater self-efficacy also engage in fewer risky sexual behaviors (such as being drunk

or on drugs during sex or never using a condom) and are older at sexual initiation than their sexually active peers who report higher perceived benefits of sex but lower self-efficacy. Furthermore, psychosocial characteristics can act as distinguishing traits of an individuals' sexuality, above and beyond their behavior. In particular, sexual self-efficacy emerged as an important distinguishing trait between latent classes. The combination of psychosocial factors also appears to impact concurrent and future sexual behavior. Findings indicate that individuals who reported a low level of sexual self-efficacy in conjunction with more positive views about sex also engaged in riskier sexual behaviors during adolescence and reported more sexual partners and a higher likelihood of STI diagnosis by young adulthood, compared to their peers who also reported very low levels of sexual self-efficacy but more negative views about sex.

Latent patterns of adolescent sexuality differed across sociodemographic groups as well as various risk and protective factors. Certain racial minorities (Blacks, American Indians, and Hispanics) were found to be more sexually active than non-Hispanic Whites and more likely to be engaged in risky sexual behavior with lower levels of sexual self-efficacy and knowledge when they were sexually active compared to their White peers. And while Asian Americans were less likely to be sexually active, they were also less likely to be “empowered” as virgins or non-virgins. Hispanic adolescents emerged as a group that was characterized by particularly low levels of sexual self-efficacy and perceived benefits of sex compared to the other groups.

Racial differences in sexual *behavior* have largely been examined from a perspective that lack of bonds (or weak/attenuated bonds) to conventional society or strains endured by individuals compromises their ability to conform to socially accepted norms and leads to deviant behavior, including youth's engagement in sexual activity (e.g. Lauritsen, 1994). The current findings add new insight to the merit of this perspective, as such differences in behavior also co-exist with differences in psychosocial aspects of sexuality; minority youth are both more likely to be sexually active and draw upon fewer psychosocial “resources”, such as knowledge and sexual self-efficacy, in navigating sexual decision-making. Additionally, various risk and protective factors were linked with patterns of adolescent sexuality such that disadvantaged social and psychological characteristics were associated with riskier patterns of adolescent sexuality, both among sexually active teens and virgins. However, controlling for these factors did not reduce racial differences in latent class membership, indicating that these risk and protective factors do not help to explain racial differences in patterns of adolescent sexuality. Future research should continue to explore and test the theoretical roots of these racial differences in both behavioral and psychosocial dimensions of adolescent sexuality.

Results from the current study also suggest that racial differences in these patterns of adolescent sexuality help to partially explain later differences in sexual behavior, specifically, the number of sexual partners by young adulthood. This finding underscores the developmental nature of adolescent sexuality and adds new insight into understanding racial differences in sexual behavior. While results of the current study suggest that patterns of adolescent sexuality may help to explain racial differences in later behavior, racial differences in latent class membership during adolescence do not help to explain racial

differences in STI diagnosis by young adulthood. This suggests that differences in both behavioral and psychosocial dimensions of sexuality do not help to explain the persistence of STI disparities between racial groups. This finding is consistent with prior research which fails to find support for behavioral explanations of racial disparities in STI rates (Eitle et al., 2015; Ellen et al., 1998; Hallfors et al., 2007), and contributes to this literature with the finding that psychosocial dimensions of sexuality do not add any additional explanatory power.

When looking at the predictive power of the latent patterns of adolescent sexuality for later sexual outcomes, results largely emphasize the importance of engagement in sex during adolescence when considering later differences in number of sexual partners and STI diagnosis. Comparisons between latent classes on these outcomes suggest that differences were most apparent between those classes who had engaged in sexual intercourse by adolescence and those who had not. However, even among youth who had not yet engaged in sexual intercourse, the combination of experiencing a low level of sexual self-efficacy while also viewing sex in a more positive way was linked with riskier sexual behavior later in young adulthood, in terms of more sexual partners and a higher likelihood of STI diagnosis compared to other adolescent virgins (see comparisons with Class Two, of whom 48% report never having had sex by Wave I). In general, findings supports prior research which points to the influential role of age at sexual initiation for later sexual behavior and outcomes (Epstein et al., 2014; Kaestle et al., 2005; Sandfort et al., 2008). However, the current study focuses explicitly on outcomes relating to later sexual behavior, while latent classes may have more utility in explaining later differences in psychosocial aspects of sexuality and romantic relationships. Future research should continue to explore the enduring impact of earlier sexual behavior *and* psychosocial components of sexuality.

As with all research, this study is not without its limitations. First, there were several dimensions of adolescent sexuality that were not captured with the current measures, including sexual orientation and non-coital sexual activity. As research suggests that patterns of sexual behavior vary among youth both across and within sexual orientations (e.g. Haydon et al., 2012b), future research should also consider how different patterns of sexual activities manifest with psychosocial components of sexuality. Second, the measure of STI diagnosis is based on self-report rather than clinical tests and therefore may suffer from issues relating to misreporting or lack of knowledge of STI status. As this study was interested in the lifetime prevalence of STI diagnosis rather than the localized incidence rate of STI infections, self-reports were used in order to capture a wider timeframe of STI experiences. This reliance on self-report may also help to explain why Hispanics and American Indians were not found to have a higher likelihood of STI diagnosis compared to Whites (CDC, 2015). Future research should explore how racial differences in STI rates may be impacted by clinical or self-reporting measurement. Third, the classify-analyze approach of assigning latent class membership was used given the complexity of models including covariates. However, this approach involves a number of limitations that should be noted, including classification error and attenuation in the estimation of the association between latent class membership and other covariates that were not included in the classification model (Bolck, Croon, & Hagenaars, 2004; Bray, Lanza, & Tan, 2015; Vermunt, 2010). Finally, the measurement of sexual self-efficacy relies on only three indicators and therefore

has only a moderate alpha level (.62). This measure would be improved with additional indicators of sexual self-efficacy beyond a focus on contraceptive use (e.g. power to give consent in sexual situations). Future research should examine this important construct with different measurement schemas.

In conclusion, adolescent sexuality is a multidimensional construct which involves both behavioral and psychosocial aspects of the adolescent sexual experience. The present study demonstrates that latent class analysis can distinguish between groups of adolescents based on both behavioral and psychosocial dimensions of their sexuality, suggesting that individuals with similar behavioral patterns are unique in psychosocial aspects of their sexuality. Furthermore, our analysis suggests that significant racial differences exist in the latent class patterns of adolescent sexuality and that these patterns can help to explain differences in later sexual behavior, in terms of the number of sexual partners experienced by young adulthood. These racial differences in patterns of adolescent sexuality, however, do not help to explain the persistence of racial differences in STI diagnosis. This finding provides further evidence that individual behavioral and psychosocial experiences do not help to explain the persistence in STI disparities. By considering both behavioral and psychosocial components of adolescent sexuality we gain new insight into the sexual landscape navigated by youth, as well as the consequences of such experiences for later outcomes.

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Fig. 1. Expected Number of Sexual Partners by Young Adulthood

Notes: all control variables are included in the model and held at their mean; results are weighted and control for stratification and clustering; Class 1 “Very Low Sexual Self-efficacy”; Class 2 “Interested but Low Sexual Self-efficacy”; Class 3 “Uninterested, Empowered Virgins”; Class 4 “Unempowered but More Interested Virgins”; Class 5 “Interested but Unempowered Risky Non-Virgins”; Class 6 “Knowledgeable Empowered Non-Virgins”

Fig. 2. Predicted Probability of STI Diagnosis by Young Adulthood

Notes: all control variables are included in the model and held at their mean; results are weighted and control for stratification and clustering; Class 1 “Very Low Sexual Self-efficacy”; Class 2 “Interested but Low Sexual Self-efficacy”; Class 3 “Uninterested, Empowered Virgins”; Class 4 “Unempowered but More Interested Virgins”; Class 5 “Interested but Unempowered Risky Non-Virgins”; Class 6 “Knowledgeable Empowered Non-Virgins”

Table 1
Comparing Fit Statistics of different Latent Class solutions of Adolescent Sexuality

Number of Latent Classes	BIC	Adjusted BIC	Entropy	Lo-Mendell Rubin Adjusted LRT test	
				value	p value
2	161299.37	16142.17	0.97	4247.59	0.001
3	159031.25	158948.62	0.93	2313.75	0.005
4	157988.25	157880.20	0.87	1104.53	0.004
5	156875.16	156741.69	0.87	1173.71	0.007
6	155898.81	155739.92	0.89	1038.74	0.001
7	155486.57	155302.25	0.89	481.96	0.097

Table 2
Means of Adolescent Sexuality Indicators by Latent class Membership

Variable	Full Sample	Class 1 <i>Very Low Sexual Self-efficacy</i>	Class 2 <i>Interested but Low Sexual Self-efficacy</i>	Class 3 <i>Uninterested, Empowered Virgins</i>	Class 4 <i>Unempowered but More Interested Virgins</i>	Class 5 <i>Interested but Unempowered Risky Non-virgins</i>	Class 6 <i>Knowledgeable, Empowered Non-virgins</i>
Sexual Knowledge (std) unstandardized	0.00 6.13	-0.94 5.19	-0.22 5.91	-0.18 5.95	-0.40 5.73	0.26 6.39	0.50 6.63
Sexual Self-efficacy (std) unstandardized	0.00 4.10	-3.68 0.53	-1.89 2.27	0.62 4.70	-0.57 3.55	-0.60 3.52	0.64 4.72
Perceived benefits of sex (std) unstandardized	0.00 2.79	-0.28 2.61	0.15 2.89	-0.40 2.53	-0.19 2.67	0.55 3.14	0.29 2.98
Never had sex	53.7%	70.0%	48.1%	100%	100%	0.0%	0.0%
First sex before age 15	18.9%	20.9%	28.1%	0%	0%	46.1%	36.4%
First sex, age 15+	27.4%	9.1%	23.8%	0%	0%	53.9%	63.6%
Drugs/Drinking at sex	6.4%	3.5%	11.0%	0%	0%	16.0%	11.9%
Never used condom at sex	4.3%	5.6%	10.2%	0%	0%	13.0%	6.0%
N (unweighted)	13,447	257	915	4,023	2,485	1,848	3,919
Proportion (weighted)	100%	1.9%	7.2%	29.9%	19%	13.3%	28.8%

Note: Means are based on weighted data. Standard errors are adjusted for survey clustering and stratification. FIML procedures used to handle missing data.

Table 3
Predictors of Latent Class Membership – Differences in Means based on Multinomial Logistic Regression Models

Variable	Overall	Class 1 Very low Sexual Self- efficacy	Class 2 Interested but Low Sexual Self- efficacy	Class 3 Un-interested, Empowered Virgins	Class 4 Un- empowered but More Interested Virgins	Class 5 Interested but Unempowered Risky Non- virgins	Class 6 Knowledge-able, Empowered Non-virgins	Differences $p < .05$
Age	16.40	16.15	16.28	16.17	16.17	16.60	16.75	5 > 1,2,3,4; 6 > 1,2,3,4,5
Female (vs male)	48.7%	54.3%	40.9%	54.1%	42.7%	33.6%	55.6%	1 > 5; 3 > 2,4,5; 4 > 5; 6 > 2,4,5
Race								White ref. group
White	56.6%	29.7%	44.4%	60.9%	57.2%	52.3%	58.6%	1 > 3,4,6; 2 > 3,4; 5 > 3,4,6; 6 > 3,4
Black	15.4%	26.5%	17.8%	11.6%	8.9%	21.2%	19.6%	2 > 3,4
Amer. Indian	6.5%	4.6%	9.3%	6.0%	6.7%	6.8%	6.2%	1 > 3,5,6; 2 > 3,5,6; 3 > 6; 4 > 3,5,6
Asian	5.3%	7.7%	7.9%	5.8%	8.9%	3.3%	2.7%	1 > 2,3,4,5,6; 2 > 3,4,6; 5 > 3,6
Hispanic	16.1%	31.6%	20.6%	15.7%	18.3%	16.4%	12.9%	
Family Structure								Intact ref. group
Intact	52.0%	56.0%	46.8%	59.9%	62.1%	42.5%	42.4%	5 > 1,2,3,4; 6 > 1,2,3,4
Stepfamily	17.5%	12.5%	12.6%	16.3%	14.9%	19.5%	21.2%	2 > 3,4; 5 > 3,4; 6 > 1,3,4
Single parent	23.5%	20.3%	30.5%	19.7%	19.3%	27.7%	26.8%	2 > 3,4; 5 > 3,4; 6 > 3,4
Other family	7.0%	11.2%	10.1%	4.1%	3.7%	10.3%	9.7%	3 > 2,5,6
Parent closeness ^a	0.00	-0.03	-0.25	0.19	0.03	-0.20	-0.10	1 > 3,4,5,6; 2 > 3,4,5,6; 4 > 3,6; 5 > 3,6; 6 > 3
Depression ^a	0.00	0.39	0.45	-0.28	-0.06	0.18	0.03	2 > 3,6; 4 > 3,6; 5 > 3,6
Impulsivity ^a	0.00	0.12	0.27	-0.12	0.15	0.21	-0.02	1 > 3,4; 2 > 3,4; 5 > 3,4; 6 > 3,4
Cigarette smoking	2.30	1.55	3.16	0.98	0.95	3.74	3.74	2 > 3,4,6; 5 > 3,4,6; 6 > 3,4
Binge drinking	15.70	10.84	28.90	6.07	7.31	33.80	19.82	

Variable	Overall	Class 1 Very low Sexual Self- efficacy	Class 2 Interested but Low Sexual Self- efficacy	Class 3 Un-interested, Empowered Virgins	Class 4 Un- empowered but More Interested Virgins	Class 5 Interested but Unempowered Risky Non- virgins	Class 6 Knowledge-able, Empowered Non-virgins	Differences $p < .05$
Marijuana use	1.88	0.96	3.25	0.49	0.85	4.11	2.74	2,5,6 > 3
Peer drug use	2.98	1.83	3.18	2.06	2.22	4.35	3.82	2 > 1; 3 > 1; 4 > 1; 5 > 1,2,3,4,6; 6 > 1,2,3,4

Note: Means are based on weighted data, with adjustments for clustering and stratification in complex survey design.

^aScales are standardized. Significance tests for group differences are based on multivariate multinomial logistic regression controlling for all variables. FIML used to handle missing data. Total n = 13,447

Table 4
Latent Classes of Adolescent Sexual Behavior and Logged Number of Sexual Partners by Young Adulthood

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Latent Class Membership (Class 5 ref δ_j)</i>					
Class 1 ^a	-0.756*** (0.14)		-0.715*** (0.14)		-0.483*** (0.14)
Class 2 ^b	-0.332*** (0.09)		-0.306*** (0.09)		-0.246** (0.09)
Class 3 ^c	-0.732*** (0.06)		-0.714*** (0.06)		-0.474*** (0.06)
Class 4 ^d	-0.684*** (0.06)		-0.650*** (0.06)		-0.446*** (0.06)
Class 6 ^e	-0.059 (0.06)		-0.060 (0.06)		0.043 (0.06)
<i>Race (black ref)</i>					
White		-0.168*** (0.05)	-0.082 (0.04)	-0.289*** (0.05)	-0.188*** (0.05)
American Indian		-0.183 (0.10)	-0.101 (0.10)	-0.242* (0.10)	-0.158 (0.09)
Asian		-0.586*** (0.08)	-0.412*** (0.07)	-0.578*** (0.07)	-0.422*** (0.08)
Hispanic		-0.395*** (0.06)	-0.272*** (0.06)	-0.418*** (0.06)	-0.299*** (0.06)
Female					-0.174*** (0.03)
Age at Wave 1					-0.072*** (0.02)
<i>Family Structure (intact ref)</i>					
Stepfamily					0.144*** (0.04)
Single parent family					0.109*** (0.04)
Other family form					0.112 (0.08)
Parental closeness (std)					-0.020 (0.02)
Depression (std)					-0.023 (0.02)
Impulsivity (std)					0.030 (0.02)
Cigarette smoking				0.018*** (0.00)	0.015*** (0.00)
Binge drinking				0.001* (0.00)	0.001 (0.00)
Marijuana use				0.010*** (0.00)	0.008* (0.00)
Peer drug use				0.079*** (0.01)	0.056*** (0.01)
Constant	2.374*** (0.05)	2.159*** (0.04)	2.475*** (0.06)	1.932*** (0.04)	3.388*** (0.26)

Notes: ordinary least square regression coefficients, standard errors in parentheses; results are weighted and control for stratification and clustering; n = 10,415;

^aVery Low Sexual Self-efficacy;

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- b Interested but Low Sexual Self-efficacy;
- c Uninterested, Empowered Virgins;
- d Unempowered but More Interested Virgins;
- e Knowledgeable Empowered Non-Virgins;
- f Interested but Unempowered Risky Non-Virgins

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Table 5
Latent Classes of Adolescent Sexual Behavior and STI diagnosis by Young Adulthood

	Model 1	Model 2	Model 3	Model 4
<i>Latent Class Membership</i> (Class 5 ref f_j)				
Class 1 ^a	-0.472 (0.31)		-0.534 (0.33)	-0.640 (0.34)
Class 2 ^b	-0.079 (0.17)		-0.033 (0.18)	-0.100 (0.18)
Class 3 ^c	-0.481*** (0.12)		-0.357** (0.12)	-0.300* (0.14)
Class 4 ^d	-0.644*** (0.14)		-0.486*** (0.14)	-0.322* (0.16)
Class 6 ^e	0.197 (0.11)		0.253* (0.12)	0.128 (0.13)
<i>Race</i> (black ref)				
White		-1.160*** (0.09)	-1.105*** (0.09)	-1.116*** (0.10)
American Indian		-0.888*** (0.19)	-0.826*** (0.19)	-0.872*** (0.21)
Asian		-1.624*** (0.21)	-1.483*** (0.22)	-1.413*** (0.22)
Hispanic		-1.073*** (0.13)	-0.971*** (0.13)	-0.961*** (0.14)
Female				1.128*** (0.09)
Age at Wave 1				-0.047 (0.04)
<i>Family Structure</i> (intact ref)				
Stepfamily				0.167 (0.11)
Single parent family				0.168 (0.10)
Other family form				0.483** (0.18)
Parental closeness (std)				-0.088* (0.04)
Depression (std)				0.087* (0.04)
Impulsivity (std)				-0.020 (0.04)
Cigarette smoking				-0.015 (0.01)
Binge drinking				0.001 (0.00)
Marijuana use				0.016* (0.01)
Peer drug use				0.080*** (0.02)
Constant	-1.012*** (0.10)	-0.279*** (0.07)	-0.220 (0.11)	-0.471 (0.64)

Notes: logistic regression coefficients, standard errors in parentheses; results are weighted and control for stratification and clustering; n = 10,415;

^aVery Low Sexual Self-efficacy;

^bInterested but Low Sexual Self-efficacy;

^cUninterested, Empowered Virgins;

^dUnempowered but More Interested Virgins;

^eKnowledgeable Empowered Non-Virgins;

^fInterested but Unempowered Risky Non-Virgins