

THE EDUCATIONAL OUTCOMES OF SURVIVORS
OF NONCONSENSUAL AND UNWANTED FIRST SEX

by

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ABSTRACT

First sex is an important step in the life course of young people, critical to the transition to adulthood, identity formation, self-concept, and persistence in education. Despite the importance of first sex as a milestone in the early life course, many young people do not make the voluntary choice to engage in their first sexual experience. Nonconsensual and unwanted sex are gendered social phenomena that can occur at any age, although such experiences are common in high school and college, when young people are learning to navigate sexual relationship. As young people are negotiating relationships and sex, they are simultaneously forming and working toward educational goals. Thus, nonconsensual sex occurring during adolescence and young adulthood—critical periods in the early life course—can be highly disruptive to academic attainment. Prior work has found that nonconsensual sex and dating violence are associated with negative educational outcomes, such as school dropout and decreased post-assault GPA. In light of the importance of first sex as a life course milestone and cultural norms regulating first sex for young American women, this paper demonstrates the impact of constrained agency at sexual debut on educational attainment. Using cross-sectional data from a representative sample of U.S. women aged 18–44 responding to the National Survey of Family Growth (NSFG) between 2011–2017, I find that women with first sexual experiences that are unwanted or nonconsensual have lower cumulative and on-time educational attainment. In particular, the most severe forms of nonconsensual first sex—forced sex and sex that is threatened with physical force—are associated with lower cumulative educational attainment, net of sociodemographic factors that affect educational attainment. Additionally, I find that first sex that is involuntary, unwanted, and involves various forms of force and coercion is associated with not completing high school by age 18. Finally, although prior research suggests that early age at first sex may explain part of the

relationship between sexual debut and education, I find that accounting for unwanted and nonconsensual first sex explains some of the variation in educational attainment net of age at first sex. I demonstrate the importance of sexual agency for academic attainment, as sexual and educational trajectories intersect in the early gendered life course of young women.

INTRODUCTION

First sex is an important step in the life course of young adults. American youth describe the loss of virginity as critical to both the construction of their identities and their transition to adulthood (Carpenter 2005). However, despite the importance of first sex as a milestone in the early life course, many young people do not make the voluntary choice to engage in their first sexual experience, instead describing their sexual initiation as involuntary, unwanted, forced, and/or coerced. Indeed, one in sixteen U.S. women between the ages of 18–44 retrospectively report that their first sexual experience was involuntary (Hawks et al. 2019).

Nonconsensual and unwanted sex are gendered social phenomena that can occur at any age, although such experiences are common in high school and college (Fedina, Holmes, and Backes 2018), when young people are learning to navigate sexual relationships and deciding what sexual projects—sex for pleasure, sex for intimacy, not having sex, etc.—are right for them (Hirsch and Khan 2020). While young people are negotiating and navigating relationships and sex, they are simultaneously forming and working toward educational goals. Thus, nonconsensual sex occurring during this early life course critical period can be highly disruptive to the lives of adolescents and young adults. Prior work demonstrates the association between nonconsensual sex and negative educational outcomes, including decreased post-assault GPA, taking time off from school, and school dropout (Hagan and Foster 2001; Mengo and Black 2016; Potter et al. 2018). Although students of any gender may experience these negative educational outcomes, the specific set of early life course expectations related to sex and education for young women may make early nonconsensual and unwanted sex particularly salient for the ability their ability to realize academic ambitions.

Although work on violence in adolescence and early adulthood demonstrates the importance of disruptions to life roles, the ramifications of nonconsensual and unwanted sexual debut are understudied, especially given the cultural importance placed on first sex for young women. The importance of sexual debut as a milestone for identity formation (Carpenter 2005), self-concept and sexual socialization (Martin 1996), and persistence in education (Parkes et al. 2010; Schvaneveldt et al. 2001; Spriggs and Halpern 2008) has been theorized in the body of literature attending to the life course ramifications of early life transitions. However, in line with a fieldwide lack of attention to sexual violence involving adolescents (Whittier 2016), the consequences of having first sex that is not voluntary or wanted has been given short shrift. Using educational attainment as a case, this paper demonstrates the importance of constrained sexual agency in the gendered life course of girls and young women. I demonstrate the significance of unwanted and nonconsensual first sex for cumulative educational attainment and on-time high school graduation using cross-sectional data from a representative sample of U.S. women aged 18–44 participating in the 2011–2013, 2013–2015, and 2015–2017 waves of the National Survey of Family Growth.

I find that women with first sexual experiences that are unwanted or nonconsensual have lower cumulative educational attainment and lower odds of graduating high school on-time. In particular, the most severe forms of nonconsensual first sex—forced sex and sex that is threatened with physical force—are associated with lower cumulative educational attainment, net of sociodemographic factors that affect educational attainment. Additionally, I find that first sex that is involuntary, unwanted, and involves various forms of force and coercion is associated with not completing high school by age 18. Finally, I show that unwanted and nonconsensual first sex may account for part of the association between early age at sexual debut and negative

educational outcomes. I demonstrate the importance of sexual agency for academic attainment, as sexual and educational trajectories intersect in the early gendered life course of young women (Carpenter 2010).

BACKGROUND

Gendered virginity norms have long held a unique place within the American cultural ethos. Even Alexis de Tocqueville (1899) noted the importance of virginity norms for American women in *Democracy in America*: “As the Americans think nothing more precious than a woman’s honor and nothing deserving more respect than her freedom, they think no punishment could be too severe for those who take both from her against her will” (p. 603). More recently, the sexual revolution in the 1960s and 1970s catalyzed long-run changes in American sexual norms, resulting in more permissive attitudes toward sex for certain groups (D’Emilio and Freedman 1989). However, political and cultural backlash to this sexual revolution led to the 1990s’ increased focus on the importance of abstinence, especially for teens. As demonstrated in Figures 1 & 2 (using data from the General Social Survey), although the proportion of Americans who report that sex before marriage is wrong has decreased dramatically since the late 1970s, the share of Americans who view sex among teenagers as wrong has remained steadily high. These conflicting norms, which legitimize sex before marriage only after a certain age, make navigating sexual behaviors in adolescence and early adulthood fraught experiences (Mollborn 2017; Schalet 2011). Additionally, gendered sexual double standards about who can and should engage in first sex during adolescence have implications for how young people view sexual debut (Carpenter 2002).

Figure 1. Attitudes Toward Sex Before Marriage Among Americans Responding to the General Social Survey (1972-2018).

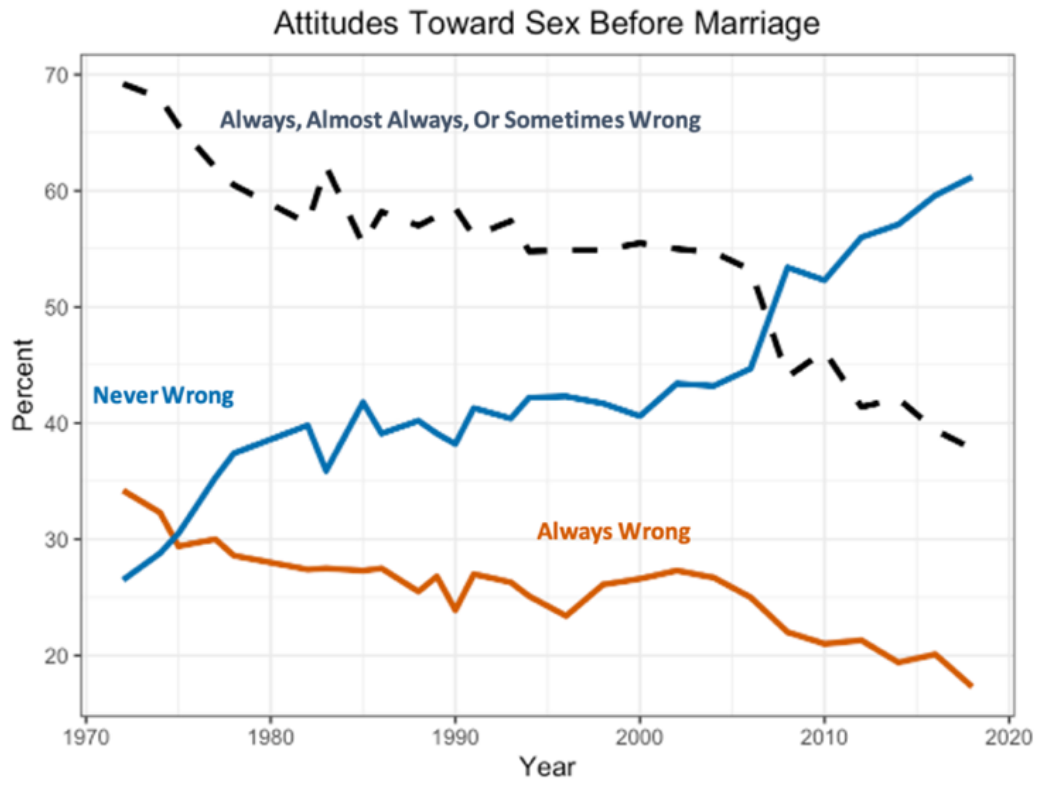
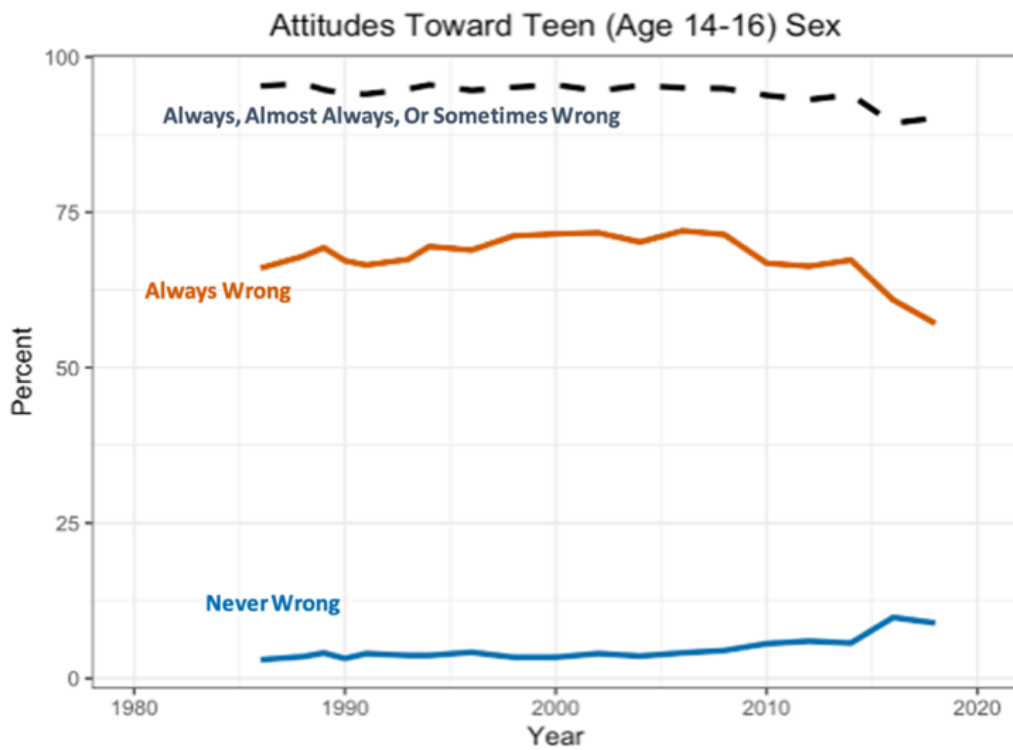


Figure 2. Attitudes Toward Teen Sex Among Americans Responding to the General Social Survey (1986-2018).



Navigating the Gendered Life Course: Sexual Debut and Education

Girls and young women in the United States experience unique social and cultural expectations related to both education and sex. As educational and professional opportunities expanded for women in the second half of the twentieth century, high school and college graduation rates ballooned among young women (Reynolds and Burge 2008). Indeed, 70% of young women now enter a 2- or 4-year college immediately after graduating from high school (National Center for Education Statistics 2023). Today, more women than men attend and graduate from college (Conger and Dickson 2017; Goldin 2014). Part of the increase in post-secondary attainment for women is attributable to the increase in expectations and aspirations for college enrollment among young women and their parents (Goldin, Katz, and Kuziemko 2006; Mau and Bikos 2000; Reynolds and Burge 2008). This new set of educational opportunities for young women makes late adolescence a time laden with internal and external academic expectations.

At the same time as they are making decisions about and working toward academic goals, young women are forming and navigating relationships, with intimate relationships during late adolescence and early adulthood increasing in importance and frequency (Arnett 2000; Scott, Steward-Streng, and Manlove 2011). During this period, young people are thinking about sexual relationships and making decisions about whether, when, and with whom to have sex (Hirsch and Khan 2020). Yet these decisions are fraught, as girls and young women face sexual double standards that position their sexuality as in need of management and control (Crawford and Popp 2003; Hamilton and Armstrong 2009; Reid, Elliott, and Webber 2011; Schalet 2011). In her book on the sexuality experiences of teenage girls, Deborah Tolman (2002) describes how teenage girls must navigate “dilemmas of desire,” which pit their wishes for pleasure and

connection through sex against internalized social pressures that paint such aspirations as psychologically, physically, and socially dangerous. At the same time as sex drive and sexual pleasure are affirmed as valid pursuits for boys and young men, girls and young women face regulation of their sexual feelings and behaviors (Russell, Van Campen, and Muraco 2012). The lack of focus on the formation of girls' and young women's sexual subjectivity—seeing oneself as a sexual person who feels pleasure and enacts control over their sexual circumstances—may lead to more negative sexual experiences, sexual victimization, and poor self-esteem (Fine 1988; Martin 1996; Tolman 2002).

Complicating matters further, adolescents and young adults are often embedded in a series of different formal and informal institutions—school communities, church communities, neighborhoods, families—which each have different norms regulating at what age sexual debut is appropriate, for whom, and with whom (Mollborn 2017). Norms communicated by parents are uniformly heteronormative and stress the importance of avoiding sex until a certain age (Crawford and Popp 2003; Mollborn 2017) or until children have established themselves as independent from their parents (Schalet 2011). In contrast, peer sexual norms vary more widely, ranging from permissive and encouraging of sex, to disapproving and stigmatizing sexual behaviors deemed “slutty” or overly casual (Hamilton and Armstrong 2009; Mollborn 2017; Risman and Schwartz 2002). Girls and young women are more likely to face overt sexual norm policing from peers, and also face a harsher set of gender norms regulating the context in which sex is deemed acceptable (Hamilton and Armstrong 2009; Mollborn 2017). Fear of this “slut stigma” is influential in the sexual decision making processes of young women and girls, causing some women to postpone sexual debut to avoid such labels (Sennott and Mollborn 2011). Violating norms regulating age at first sex and the expectation of sex within a romantic

relationship has negative effects of the self-esteem and mental health of young women (Meier 2007). Despite robust evidence that adolescent girls and young women may be socially sanctioned for violating sexual norms, it is unclear if the policing of adolescent sexual debut extends to those who had sex that was unwanted or nonconsensual.

Gender differences steeped in sexual double standards are baked into how young Americans view sexual debut (Carpenter 2002). Sexual double standards manifest in disparities in how young American men and women engage in first sex, with young men reporting that they are more ready and willing to engage in first sex, and less likely to be forced or coerced than young women (Rind 2020). Gender differences also manifest in how young people talk about and experience the long-term effects of their sexual debut. In her work with American youth in the late 1990s, Laura Carpenter (2005) found that young people primarily use three different narratives to describe their virginity loss experiences. For some, especially young men and women who see the loss of virginity as a positive, desirable rite of passage associated with self-knowledge, virginity loss is a natural step in the transition from adolescence to adulthood. For others, primarily young men, virginity is viewed as a stigma to be rid of hastily due to its association with sexual incompetence. Finally, some youth, especially young women, see virginity loss as a gift one bestows upon a committed and loving partner. Those who employ this final framing are more likely to describe feeling disempowered in their decision to have first sex, as these women are more likely to see their partners as controlling their virginity loss experience (Carpenter 2005). Additional research has found that those with the gift framing report that the circumstances of their virginity loss leave a lasting impact on their life (Humphreys 2013), possibly due to the lack of control that those with this framing feel over their sexual initiation. Given the importance of virginity loss as a key life event for identity formation and adult role

transition, understanding the ramifications of this experience is important, especially for those young women and girls who have limited agency at first sex.

Further, heterogeneities in virginity loss experiences are particularly important, as there is little understanding of how those who have nonconsensual and unwanted first sex conceptualize their experiences. Although Carpenter (2001) found that two-thirds of women said that virginity could not be lost as the result of rape or coercion, the two participants in her study who were raped at sexual debut *did* consider this experience to constitute loss of virginity. More work is needed to understand how the experiences of those who have nonconsensual or unwanted first sex differ in both meaning and consequences from those who chose to engage in first sex. As early life violence is associated with premature exits from adolescent roles (Hagan and Foster 2001), including school enrollment, understanding how unwanted and nonconsensual first sex may affect the educational outcomes of young people is of key importance to providing supportive resources and programing for students who experience this unique form of constrained agency.

Understanding sexual debut, and its relationship to school persistence is of key importance for understanding how girls and young women enter adulthood. In the United States, recent economic and culture changes have altered the way young adults come of age. Young adulthood has been described as a “demographically dense” period in the life course due to the small span of time during which a series of important transitions occur—leaving school, entering marriage, and entering parenthood, to name a few (Rindfuss 1991). Recent changes to the timing and sequencing of these transitions, including delay in the normative age at first marriage and childbearing (Lesthaeghe 2010), have made transitions and rites of passage that frequently occur during late adolescence increasingly important for self-conceptualization and social functioning

when entering into young adulthood (Carpenter 2001). Rites of passage like sexual debut represent significant transitions between statuses, with many American youth conceptualizing the decision to engage in first sex as a turning point between adolescence and adulthood (Carpenter 2001; Shanahan and Macmillan 2008). The loss of virginity is also acutely important for the formation of personal and social identities (Carpenter 2001), which in turn impact how individuals interact with their social world. As events that occur early in the life course cumulatively impact outcomes later in life, constraints on agency early in life may be important for later life outcomes, like educational attainment, relationship formation, parenthood decisions, and later life health (Elder 1995; Shanahan and Macmillan 2008). Thus, the circumstances under which one starts their sexual career may have implications for long-run identity and goal formation and social functioning.

Unwanted and Nonconsensual Sex in the Early Life Course

Unwanted and nonconsensual sex, experiences that fall under the umbrella of sexual violence, are gendered social phenomena that violate the reproductive health and rights of individuals (Hasstedt and Rowan 2016). Although sexual violence can occur at any age, these experiences are more common among young people. Indeed, of the one in five women who experience completed or attempted rape in their lifetime, over 80% reported that their first experience was prior to age 25, and half reported a first experience prior to age 18 (Basile et al. 2022). During this time of sexual learning and relationship exploration, young people are at risk for unwanted and nonconsensual sex, often driven by imbalances in power based on gender, age, social status, sexual orientation, and sexual experience (Hirsch and Khan 2020). As forced and coerced sex is common during adolescence and early adulthood, a time when young people are

forming and working toward educational goals, early sexual violence may negatively impact the ability of young people to realize academic ambitions.

Sexual violence is associated with myriad negative academic outcomes. In a probability sample of U.S. women, nearly 70% of survivors who experienced sexual assault between the ages of 18–24 reported at least one negative school or work outcome, including changing program of study, taking time off school, and poor academic performance (Potter et al. 2021). College sexual violence is associated with increased school dropout, as well as decreased post-assault GPA (Mengo and Black 2016). Indeed, the rate of dropout after sexual assault victimization is higher than the overall university dropout rate (34.1% vs. 29.8%; Mengo and Black 2016). Sexual assault during high school is associated with lower grades relative to students without these sexual violence experiences (Hammig and Jozkowski 2013). Further, violence in high school dating relationships is associated with early exits from traditional adolescent roles, including dropping out of school and early pregnancy (Hagan and Foster 2001). Although sexual violence is correlated with worse educational outcomes, few studies have investigated how the timing of sexual violence, including unwanted and nonconsensual sexual debut, are associated with both short-term and long-run educational attainment.

In this study, I seek to fill this gap using data on American women's first sexual experiences to assess the relationship between unwanted and nonconsensual sexual debut and educational attainment. I test the following hypotheses:

H1: Girls and young women who experience first sex that is unwanted or nonconsensual will attain less education than those who do not have these experiences of unwanted or nonconsensual first sex.

H2: Nonconsensual and unwanted first sex will be associated with lower odds of completing high school on-time (by age 18).

Age at First Sex

Although literature investigating the long-term associations between early sexual violence and education is limited, the link between sexual debut and educational attainment has been a source of interest for scientific investigation. Studies consistently show that early age at sexual debut is associated with decreased educational attainment and lower educational achievement (Parkes et al. 2010), especially for girls and young women (Huang et al. 2019; Parkes et al. 2010; Schvaneveldt et al. 2001; Spriggs and Halpern 2008). Early sexual debut is associated with reduced participation in postsecondary education (Parkes et al. 2010; Spriggs and Halpern 2008), school dropout (Parkes et al. 2010), diminished school attachment (Sabia 2007), and decreased perceived importance of attending college (Billy et al. 1988). Huang and colleagues (2019) estimated that sexual debut is associated with one year of lost schooling for girls who engage in sex during adolescence. Although early pregnancy and childbearing, which can reduce enrollment in school due to lack of institutional childcare support, has been found to explain some of the effect of early sexual debut on educational attainment (Spriggs and Halpern 2008), it does not fully account for this relationship (Parkes et al. 2010). Another proposed explanation for the relationship between early sexual debut and decreased education is that adolescents who are less engaged in school and have fewer goals related to academic achievement are more likely to engage in sex earlier than their more academically oriented peers. Schvaneveldt and colleagues (2001) present evidence to support selection into younger age at first sex by adolescents with lower educational goals and achievement. However, they also find that academic achievement and goals declined longitudinally for youth who had sexual debut

between survey waves, suggesting that there is something about sexual debut itself that may affect academic outcomes. Despite prevalent early life sexual violence and its demonstrated effects on education, discussion of sexual violence during adolescence as a possible contributing factor in this association has been absent. To assess if constrained sexual agency at first sex explains some of the association between age at sexual debut and educational attainment, I test the following exploratory hypothesis:

H3: Nonconsensual and unwanted first sex will mediate the relationship between age at sexual debut and educational attainment.

DATA AND METHODS

Study Design

Data for this study were derived from the public-use data files for the 2011–2013, 2013–2015, and 2015–2017 waves of the National Survey of Family Growth (NSFG). This cross-sectional survey is nationally representative of women (aged 15 to 44 for the 2011–2015 waves, aged 15 to 49 for the 2015–2017 waves). Participants provided information on sexual and reproductive health, sexual initiation, family formation, education, and sexual violence experiences (National Center for Health Statistics 2020). The survey is conducted by the Centers for Disease Control and Prevention and uses a multistage, household-based survey design of civilians and non-institutionalized individuals. Survey data were collected using in-person interviews. Sensitive questions were asked using Audio Computer-Assisted Self-Interview (ACSI).

As male participants were not asked questions about nonconsensual or unwanted first sex in the waves under study, analyses are limited to female participants in each wave. NSFG-designed six-year sampling weights for the 2011–2017 period were applied (sample weights

represent the U.S. population in 2014; National Center for Health Statistics 2019). Due to the lack of data on women aged 45–49 in waves 2011–2013 and 2013–2015, the weighting procedure results in the loss of women over age 45 from the analytic sample. Thus, analyses are restricted to women between the ages of 18–44. Final weighted response rates for female respondents were 73.4% for the 2011–2013 wave, 71.2% for the 2013–2015 wave, and 66.7% for the 2015–2017 wave.

Survey Measures

Outcome Measures

Educational attainment. Respondents were asked a series of questions about their educational attainment. First, respondents reported how many years of education they completed, with answers ranging from 9th grade or less to 7+ years of college/graduate school. Further, respondents reported if they had achieved a high school diploma, a GED, an Associate’s degree, a Bachelor’s degree, and any other professional or post-secondary degree. Consistent with previous literature (Manning 2020), for the cumulative educational attainment measure I recoded education into a four-category variable with the following levels: 1) less than high school, 2) high school diploma or GED, 3) some college (including Associate’s degree), and 4) Bachelor’s degree or higher.

On-time high school graduation. In addition to the attainment measure reported above, respondents were also asked to report the year in which they graduated from high school. Using the year of survey administration and the participants’ age at the time of survey administration, I estimated the year the participant was born.¹ Then, I subtracted the estimated year of birth from

¹ As the public-use data set does not include information on participant birth date, I must rely on birth year alone for these estimates. This procedure assumes participants are born in the part of the year before/including the date of survey administration.

the year of high school graduation to approximate age at graduation. Participants who graduated at or by age 18 were considered to graduate on-time. Those who graduated after age 18, those who received a GED instead of a high school diploma, and those with less than a high school education were considered not to have achieved on-time high school graduation. On-time high school graduation is an appropriate measure, as interrupted school enrollment and grade retention are associated with low cumulative educational attainment (Bornsheuer et al. 2011; Goldrick-Rab 2006; Hughes et al. 2018; Jimerson, Anderson, and Whipple 2002; Milesi 2010; Roderick 1994).

Predictors

Nonconsensual and unwanted first sex. Prior research has demonstrated that wanting sex and consenting to sex are two different dimensions of sexual agency that need to be disentangled to understand women's sexual experiences (Abma, Driscoll, and Moore 1998; Peterson and Muehlenhard 2007). As such, in order to better understand the first sexual experiences of U.S. women, I investigate several measures of unwanted and nonconsensual first sex. Respondents were asked nine questions to ascertain whether first sex was nonconsensual or unwanted. For each of the survey waves, individuals were asked, "Think back to the very first time you had vaginal intercourse with a male. Which would you say comes closest to describing how much you wanted the first vaginal intercourse to happen?" Response options included 1) "I really didn't want it to happen at the time," 2) "I had mixed feelings – part of me wanted it to happen at the time and part of me didn't", and 3) "I really wanted it to happen at the time." Respondents were also asked, "Would you say then that this first vaginal intercourse was voluntary or not voluntary, that is, did you choose to have sex of your own free will or not?" Response options included "voluntary" or "not voluntary." If participants reported that sex was

not voluntary, not wanted, or that they had mixed feelings, respondents were prompted to answer seven more questions about different tactics of nonconsensual sex and forms of coercion and force. These tactics included, 1) being given alcohol or drugs, 2) the other person being bigger or older, 3) threats to end the relationship, 4) being pressured through words or actions, 5) threats of physical injury, 6) physical injury, and 7) being held down. Respondents could answer yes or no to each force/coercion option, and could refuse to answer any item.

Using these nine variables, I constructed six indicators of nonconsensual and unwanted sex. First, I considered sex unwanted if the respondent answered “I really didn’t want it to happen at the time” to the first question. Second, I considered sex to be involuntary if the respondent answered “not voluntary” to the second question. I then created four measures of nonconsensual sex including: 1) force (yes to physical injury and/or being held down), 2) coercion (yes to the other person being bigger or older, threats to end the relationship, and/or pressured through words or actions), 3) alcohol/drug facilitation (yes to given alcohol or drugs), and 4) threats of physical violence (yes to threats of physical injury).

Further, measures of age and grade at first sex were used to ensure that first sex occurred prior to the outcome of interest. For models of on-time high school graduation, participants were considered to have unwanted and/or nonconsensual first sex if they said yes to one of the indicators above *and* reported that first sex occurred at or before the age of 18 (or at or before the age of graduation/drop out if they left school before age 18). For models of cumulative educational attainment, participants were coded as experiencing unwanted and/or nonconsensual first sex if they reported one of these experiences prior to leaving school or graduating. Participants who had unwanted and/or nonconsensual first sex following the outcome of interest were coded as “no” for unwanted and/or nonconsensual first sex to ensure integrity of the

temporal chain of events. Participants who reported having consensual and wanted first sex, as well as those who never had sex, were coded as not experiencing nonconsensual and unwanted first sex for all models.

Sociodemographic controls. A series of sociodemographic controls were included in the multivariable models to account for selection into both greater educational attainment and nonconsensual first sex (Abma et al. 1998; Axinn, Bardos, and West 2018). Three measures of childhood socioeconomic status are included: 1) a suite of childhood socioeconomic status indicators, including mother's education, family composition at age 14, and whether or not the respondent's mother had a baby before age 18, 2) an indicator of respondent's self-reported race and ethnicity, and 3) whether the respondent's mother worked (including full- and part-time work) or not when the respondent was growing up. Further, as education rates have monotonically increased over the past quarter century, I include birth year as a control to account for this secular increase in education across time (Schmidt 2018).²

Analytic Strategy

First, in Table 1, I present descriptive statistics, including population weighted estimates of the number of women survivors of each from of unwanted and nonconsensual first sex in the U.S. Next, in Figure 3, I use ordinal regression models with and without covariates to estimate associations between nonconsensual and unwanted first sex and educational attainment. Each coefficient represents the point estimate from a different model of educational attainment on one measure of unwanted or nonconsensual first sex with or without controls. In Figures 4 and 5, I

² Birth year is used instead of age in the analyses due to the cross-sectional, multi-wave nature of this survey. Cultural differences affecting the meaning of education and sex across time may make for different experiences for participants who are the same age in different years (i.e., aged 20 in 2011 versus 2017). As such, I control for birth year to account for these possible cohort effects. Models are robust to including age as a covariate in place of birth year.

present results from two multinomial logistic regressions to demonstrate the nuanced relationship between two measures of nonconsensual sex—forced first sex and first sex threatened with physical violence—and cumulative educational attainment. In these models, I limit analyses to include only those aged 26 and older to allow participants time to complete their highest level of education.

In Figure 7, I use logistic regression models to estimate associations between nonconsensual and unwanted first sex and on-time high school completion. Each coefficient represents the point estimate from a different model of on-time high school education on one measure of unwanted or nonconsensual first sex with or without controls. These models are constrained to include only those aged 19 and older, as those surveyed at age 18 may have been interviewed in the middle of their senior year of high school and thus would not have graduated yet.

Finally, I test if nonconsensual and unwanted first sex mediate the relationship between educational attainment and age at first sex. I present models of age at first sex with the sociodemographic controls, followed by models controlling for nonconsensual and unwanted first sex. Table 2 presents ordinal logistic regressions of educational attainment on age at sexual debut, as well as the measures of unwanted and nonconsensual first sex. Table 3 presents logistic regressions of on-time high school graduation on age at sexual debut and unwanted or nonconsensual first sex.

RESULTS

Descriptives

Table 1 presents the descriptive statistics for the sample. In terms of educational attainment, 10% of the sample achieved less than high school education, 23% received a high

school diploma or GED, 29% completed some college, and 38% completed a Bachelor's degree or higher. The majority of the sample (70%) completed high school by age 18. Among the full analytic sample aged 19–44, about half (52.1%) of respondents' mothers had a high school education or less. Most respondents (64.7%) lived with their biological or adoptive parents while growing up, with 9.5% reporting living with their mother and stepfather, and 25.8% reporting living in any other parental or nonparental situation. Respondents reported that their mother had her first child before age 18 in 16.4% of cases. The majority of respondents grew up with a mother who worked part- or full-time (74.6%). The sample was racially and ethnically diverse. About half (56.2%) of participants were non-Hispanic white, 13.7% were non-Hispanic Black, 19.8% were Hispanic, and 10.3% were another race or mixed race. The average respondent birth year across the survey waves was 1982. Among those who ever had sex, median age at first sex was 17 years old.

Unwanted and/or nonconsensual first sex occurred prior to completing the highest level of education in 2–15% of the analytic sample aged 26–44, depending on the measure. Before leaving school, 6.0% of women (representing an estimated 2.3 million U.S. women) had first sex that was involuntary, and 9.8% of women (estimated 3.8 million women) had first sex that was unwanted. The most common form of unwanted or nonconsensual first sex, coerced first sex, was experienced by 14.6% of the sample (an estimated 5.6 million women) before leaving school. Alcohol or drug facilitated first sex (5.6%, estimated 2.2 million women), forced first sex (3.6%, estimated 1.4 million women), and first sex threatened with physical violence (1.9%, estimated 700,000 women), were less commonly experienced.

In the sample of women aged 19–44, unwanted and/or nonconsensual first sex occurred in 1–12% of women prior to graduating from or leaving high school. First sex was unwanted for

8.1% (estimated 4.3 million U.S. women) and was involuntary for 4.8% (estimated 2.6 million women) of women prior to graduating from or leaving high school. Again, coerced first sex was the most common form of unwanted and/or nonconsensual first sex, with 12.0% of women (estimated 6.4 million women) reporting this experience before graduating from or leaving high school. Alcohol or drug facilitated first sex experienced before leaving or graduating high school was reported by 4.7% of women (estimated 2.5 million women). The two least common forms of unwanted and/or nonconsensual first sex before leaving or graduating high school were forced first sex (3.1%, estimated 1.6 million women) and sex threatened with physical violence (1.8%, estimated 900,000 women).

Table 1. Sample Descriptives.

	Age 26-44		Age 19-44	
	Proportion	Estimated # of Women in U.S.	Proportion	Estimated # of Women in U.S.
Highest educational attainment				
Less than high school	.104	4.0 million	-	-
High school diploma or GED	.229	9.0 million	-	-
Some college (including 2-year degree)	.292	11.5 million	-	-
Bachelor's degree or higher	.376	14.8 million	-	-
On-time high school completion	-		.701	37.8 million
<i>Predictors</i>				
Involuntary first sex ¹	.060	2.3 million	.048	2.6 million
Unwanted first sex ¹	.098	3.8 million	.081	4.3 million
Forced first sex ¹	.036	1.4 million	.031	1.6 million
Coerced first sex ¹	.146	5.6 million	.120	6.4 million
Given alcohol/drugs during first sex ¹	.056	2.2 million	.047	2.5 million
Threatened with physical violence during first sex ¹	.019	700,000	.018	900,000
Mother's education				
Less than high school	.237	9.2 million	.220	11.8 million
High school or GED	.308	12.0 million	.301	16.0 million
Some college (including 2-year degree)	.237	9.3 million	.247	13.2 million
Bachelor's degree or higher	.218	8.5 million	.232	12.4 million
Family composition at age 14				
Lived with both biological or adoptive parents	.658	26.0 million	.647	34.9 million
Lived with biological mother and stepfather	.094	3.7 million	.095	5.1 million
Lived with any other parental/nonparental situation	.248	9.8 million	.258	13.9 million
Mother had first baby before age 18	.165	6.4 million	.164	8.6 million
Mother worked full- or part-time	.729	28.3 million	.746	39.8 million
Race/Ethnicity				
Non-Hispanic white	.572	22.5 million	.562	30.3 million
Hispanic	.192	7.6 million	.198	10.7 million
Non-Hispanic Black	.133	5.2 million	.137	7.4 million

Non-Hispanic other or mixed race	.103	4.1 million		.103	5.5 million
Birth year (Mean, SE)	1979.37 (.10)	-		1982.79 (.13)	-

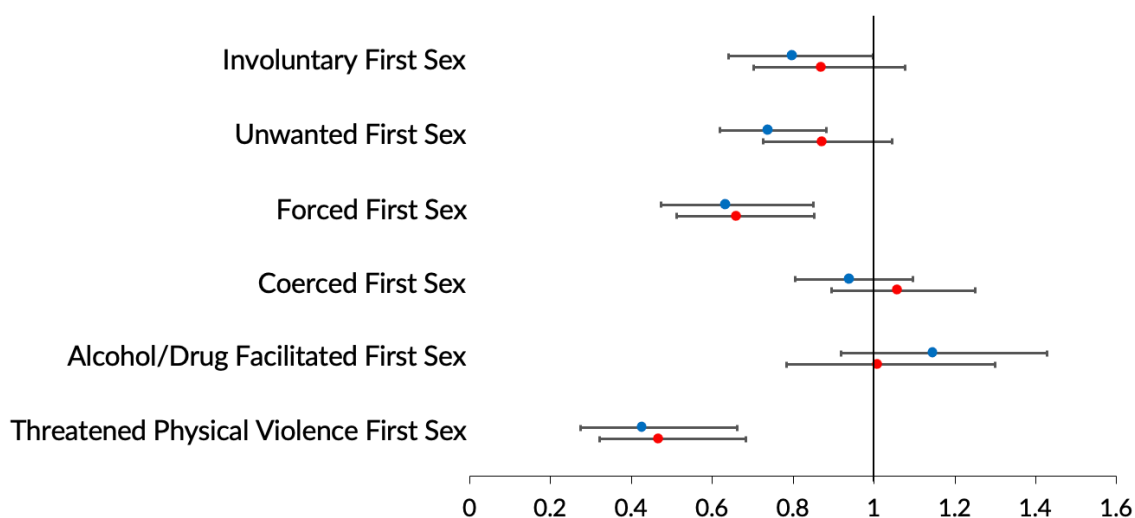
Notes: ¹Prior to outcome of interest. For highest educational attainment, prior to leaving school or completing degree. For on-time high school completion, prior to graduating or leaving high school (or prior to age 18 if left high school later).

Educational Attainment Models

First, I discuss the findings evaluating the association between unwanted or nonconsensual first sex and cumulative educational attainment. Figure 3 (Appendix Table 1) displays the odds ratios for the ordinal logistic regression models estimating the unadjusted and adjusted relationship between educational attainment and nonconsensual and unwanted first sex. Involuntary first sex, unwanted first sex, forced first sex, and first sex threatened with physical violence are all associated with lower odds of educational attainment in the unadjusted models. Net of sociodemographic controls, women who experience forced first sex have lower odds of progressing to the next stage in their educational trajectory (OR=0.66, 95% CIs=0.51, 0.85). Additionally, women who experience first sex involving threats of physical violence have lower odds of completing the next level of education (OR=0.47, 95% CIs=0.32, 0.68), on average, compared to women who do not have this experience. Interestingly, the most common form of nonconsensual or unwanted first sex, coerced first sex (OR=1.06, 95% CIs=0.90, 1.25), was not significantly associated with cumulative educational attainment, nor was alcohol/drug facilitated first sex (OR=1.00, 95% CIs=0.78, 1.30).

Figure 3. Odds ratios from adjusted (blue) and unadjusted (red) ordinal logistic regressions of educational attainment on six measures of nonconsensual and unwanted first sex.

Adjusted (red) and unadjusted (blue) odds ratios from ordinal regressions of educational attainment on six measures of nonconsensual and unwanted first sex.



Notes: Each point estimate and error bar represents an estimate from a different ordinal logistic regression model. Point estimates are odds ratios and error bars are 95% confidence intervals. Adjusted estimates control for mother's education, family composition at age 14, whether their mother had her first baby before age 18, race/ethnicity, whether their mother worked part-time/full-time versus did not work, and birth year. Table with coefficients for controls included as Appendix Table 1.

The covariates are associated with odds of educational attainment in the expected directions across models. Compared to women whose mothers have less than a high school education, on average, women whose mothers completed high school or earned a GED (OR=1.90, 95% CIs=1.61, 2.25), completed some college (OR=3.20, 95% CIs=2.70, 3.78), or completed a bachelor's degree or higher (OR=6.22, 95% CIs=5.03, 7.69), had higher odds of progressing to the next level of educational attainment.³ Women who lived with their mother and stepfather (OR=0.51, 95% CIs=0.42, 0.62) and women living in other parental or nonparental situations growing up (OR=0.51, 95% CIs=0.44, 0.59), had lower odds of achieving the next level of educational attainment compared to women who lived with both biological or adoptive parents growing up. Women whose mother had a baby before age 18 (OR=0.52, 95% CIs=0.44,

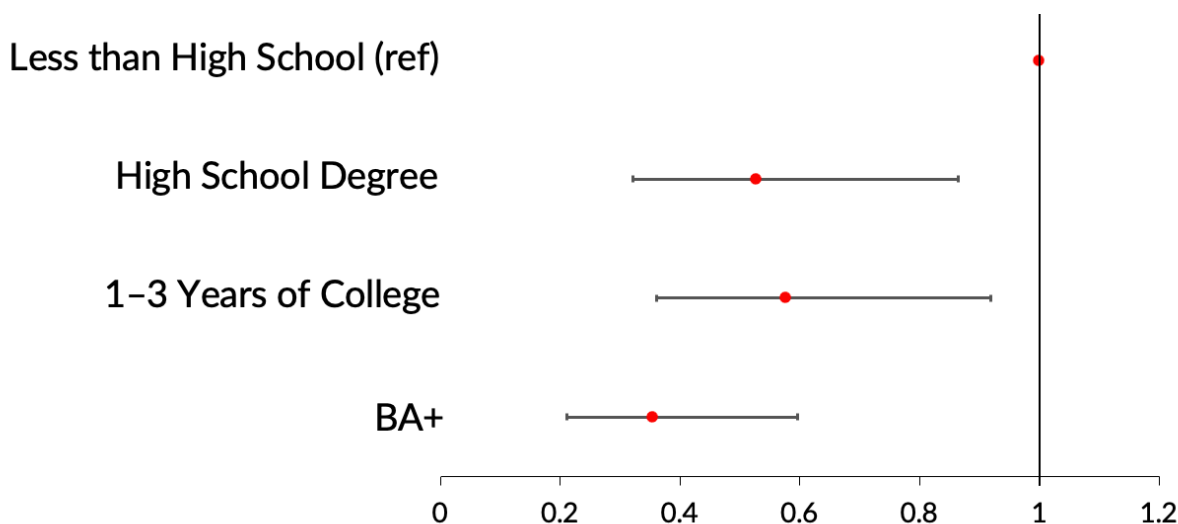
³ Covariate coefficients and 95% confidence intervals presented in-text are from Model 1 regressing educational attainment on involuntary first sex and controls. However, the direction of results are consistent across all models. Appendix Table 1 shows coefficients for covariates across all six regression models.

0.60) had lower odds of achieving higher levels of educational attainment. Women whose mothers worked part- or full-time while they were growing up (OR=1.23, 95% CIs=1.07, 1.41) had higher odds of achieving additional levels of education than women whose mothers did not work. Non-Hispanic Black (OR=0.68, 95% CIs=0.57, 0.81) and Hispanic women (OR=0.39, 95% CIs=0.32, 0.46) had lower odds of achieving the next level of education than their white peers. There was no effect for Non-Hispanic multiracial/other race women compared to white women. Additionally, there was no effect for birth year.

To demonstrate the nuance in the relationship between unwanted and nonconsensual first sex and cumulative educational attainment, a series of multinomial logistic regressions were also computed. Results for forced first sex and first sex involving threats of physical force (the two significant relationships found in the adjusted ordinal logistic regressions) are displayed. Figure 4 shows the relative risk ratios from adjusted multinomial logistic regression of cumulative educational attainment on forced first sex using less than high school as the reference group. Women who experienced forced first sex had a lower risk of completing high school (RRR=0.53, 95% CIs=0.32, 0.86), some college (RRR=0.58, 95% CIs=0.36, 0.92), and a Bachelor's degree or higher (RRR=0.35, 95% CIs=0.21, 0.59), relative to women with less than a high school degree. Additionally, women who had forced first sex had lower relative risk of completing a Bachelor's degree (RRR=0.614, 95% CIs=0.38, 0.98), relative to completing some college (results not shown). However, among women who had forced first sex, there was no effect for completing a Bachelor's degree (RRR=0.67, 95% CIs=0.43, 1.06) relative to completing a high school degree or earning a GED (results not shown).

Figure 4. Adjusted relative risk ratios from multinomial logistic regressions of educational attainment on forced first sex with controls.

Adjusted relative risk ratios from multinomial logistic regressions of cumulative educational attainment on forced first sex

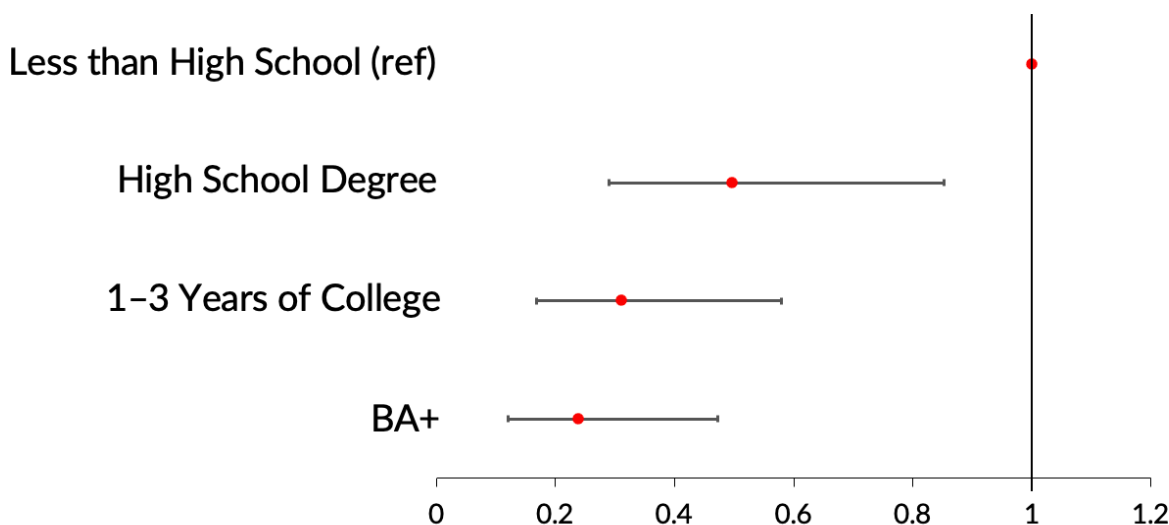


Notes: Point estimates are relative risk ratios and error bars are 95% confidence intervals. Adjusted estimates control for mother's education, family composition at age 14, whether their mother had her first baby before age 18, race/ethnicity, whether their mother worked part-time/full-time versus did not work, and birth year. Table with coefficients for controls included as Appendix Table 2.

Figure 5 shows the results from the multinomial logistic regression of cumulative educational attainment on first sex threatened with physical violence. Relative to not completing high school, women who experience threats of physical violence at first sex have lower risk of completing a high school degree (RRR=0.50, 95% CIs=0.29, 0.85), some college (RRR=0.31, 95% CIs=0.17, 0.58), and Bachelor's degree or more (RRR=0.24, 95% CIs=0.12, 0.47). Women who had first sex threatened with physical force were also less likely to earn a Bachelor's degree (RRR=0.48, 95% CIs=0.26, 0.86) relative to a high school degree or GED (results not shown). However, among women who had first sex threatened with physical violence, there was no effect for completing a Bachelor's degree (RRR=0.76, 95% CIs=0.40, 1.47) relative to completing some college (results not shown).

Figure 5. Adjusted relative risk ratios from multinomial logistic regressions of educational attainment on first sex threatened with physical violence with controls.

Adjusted relative risk ratios from multinomial logistic regressions of cumulative educational attainment on first sex threatened with physical violence



Notes: Point estimates are relative risk ratios and error bars are 95% confidence intervals. Adjusted estimates control for mother's education, family composition at age 14, whether their mother had her first baby before age 18, race/ethnicity, whether their mother worked part-time/full-time versus did not work, and birth year. Table with coefficients for controls included as Appendix Table 3.

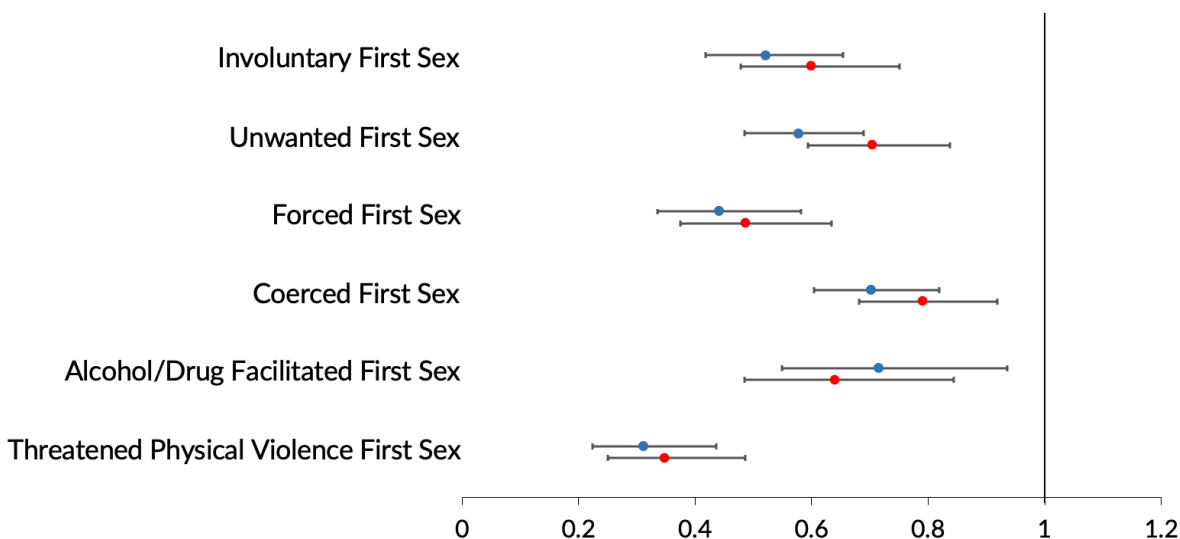
On-Time High School Graduation Models

Next, I present the findings demonstrating the association between on-time high school graduation and unwanted or nonconsensual first sex. Figure 6 shows results from the unadjusted and adjusted logistic regression models estimating the associations between on-time high school completion and unwanted and nonconsensual first sex. All forms of unwanted and nonconsensual first sex are associated with lower odds of graduating from high school by age 18, net of sociodemographic controls. Women who had involuntary first sex (OR=0.60, 95% CIs=0.48, 0.75) or unwanted first sex (OR=0.71, 95% CIs=0.59, 0.84) prior to age 18 had reduced odds of graduating from high school on-time. Women who experienced forced first sex were half as likely (OR=0.49, 95% CIs=0.37, 0.63) to graduate high school on-time compared to

women who did not have this experience. Women who had first sex threatened with physical force were one-third as likely (OR=0.35, 95% CIs=0.25, 0.49) to graduate on-time from high school. Odds of graduating from high school on-time were 0.79 (95% CIs=0.68, 0.92) for women who had coerced first sex, and 0.64 (95% CIs=0.49, 0.84) for women who had alcohol/drug facilitated first sex, relative to women who did not have these respective experiences.

Figure 6. Odds ratios from adjusted (red) and unadjusted (blue) logistic regression models of on-time high school graduation on six measures of nonconsensual and unwanted first sex.

Adjusted (red) and unadjusted (blue) odds ratios from logistic regressions of on-time high school graduation on six measures of nonconsensual and unwanted first sex.



Notes. Each point estimate and error bar represents an estimate from a different logistic regression model. Point estimates are odds ratios and error bars are 95% confidence intervals. Adjusted estimates control for mother's education, family composition at age 14, whether their mother had her first baby before age 18, race/ethnicity, whether their mother worked part-time/full-time versus did not work, and birth year. Table with coefficients for controls included as Appendix Table 4.

Compared to women whose mother completed less than high school, women whose mother completed high school or a GED (OR=2.02, 95% CIs=1.73, 2.36), some college (OR=2.47, 95% CIs=2.08, 2.94), or a Bachelor's degree or higher (OR=3.35, 95% CIs=2.74,

4.10), had lower odds of completing high school on-time.⁴ Women who lived with their mother and stepfather (OR=0.63, 95% CIs=0.53, 0.75) or in some other parental or nonparental living situation (OR=0.54, 95% CIs=0.46, 0.63) while growing up had lower odds of completing high school on-time. Women whose mother had a baby prior to age 18 (OR=0.67, 95% CIs=0.57, 0.77) had lower odds of graduating on-time from high school. Having a mother who worked part- or full-time when respondents were growing up was associated with higher odds of graduating from high school by age 18 (OR=1.24, 95% CIs=1.10, 1.41). Non-Hispanic Black women (OR=0.71, 95% CIs=0.58, 0.86), Hispanic women (OR=0.54, 95% CIs=0.45, 0.64), and non-Hispanic multiracial or other race women (OR=0.78, 95% CIs=0.62, 0.98), have lower odds of graduating high school on-time than their white peers. Birth year is associated with higher odds of graduating high school on time (OR=1.02, 95% CIs=1.01, 1.03), with younger women more likely to have on-time high school graduation.

Age of First Sex

In this section, I test the hypothesis that unwanted and nonconsensual first sex mediate the relationship between age at first sex and educational attainment. In bivariate analyses, individuals who experienced all forms of unwanted or nonconsensual first sex had younger age at first sex. For example, individuals who had involuntary first sex ($M = 16.7$, $SD = 0.37$) were one year younger on average than those who had voluntary first sex ($M = 17.6$, $SD = 0.06$, $t(13,232) = 4.07$, $p < 0.001$). The age disparity is greatest for those who had forced first sex ($M = 15.3$, $SD = 0.35$) compared to those who did not have this experience ($M = 17.7$, $SD = 0.06$, $t(13,230) = 8.32$, $p < 0.001$), and for those who had first sex threatened with physical violence ($M = 15.3$, $SD = 0.57$) compared to those who did not ($M = 17.6$, $SD = 0.06$, $t(13,230) = 6.26$, $p < 0.001$).

⁴ Covariate coefficients and 95% confidence intervals presented in-text are from Model 1 regressing on-time high school completion on involuntary first sex and controls. However, the direction of results are consistent across all models. Appendix Table 4 shows coefficients for covariates across all six regression models.

Table 2 presents the results from models of educational attainment on age at first sex and sociodemographic controls (Model 1), and with controls for the six measures of unwanted and nonconsensual first sex (Models 2–7). Model 1 shows that age at first sex is associated with educational attainment, with older age at first sex associated with greater odds of moving to the next level of educational attainment. Models 2-7 demonstrate that older age at first sex remains significantly associated with higher educational attainment when controlling for each measure of unwanted and nonconsensual first sex. However, as demonstrated by Model 4 and Model 7, net of age at first sex and other sociodemographic controls, forced first sex (OR=0.72, 95% CIs=0.56, 0.93) and first sex threatened with physical violence (OR=0.51, 95% CIs=0.35, 0.74) also remain significantly associated with educational attainment. This suggests that, although forced first sex and first sex threatened with physical violence do not mediate the relationship between age at first sex and educational attainment, they do uniquely account for some of the variation in educational attainment.

Table 3 presents the results from models of on-time high school graduation on age at first sex accounting for sociodemographic controls (Model 1), and with controls for unwanted and nonconsensual first sex (Models 2-7). Model 1 demonstrates that age at first sex is significantly associated with on-time high school graduation, with higher odds of graduating high school on-time among those who were older at first sex. Interestingly, when controlling for unwanted and nonconsensual first sex, age at first sex is not significantly associated with on-time high school graduation in any of the models except alcohol/drug facilitated first sex (Model 6). Further, all of the measures of unwanted and nonconsensual first sex remain significantly associated with on-time high school graduation, suggesting that unwanted and nonconsensual first sex may partially mediate the relationship between age at first sex and on-time high school graduation.

stepfather	(0.44, 0.64)	(0.45, 0.66)	(0.45, 0.66)	(0.45, 0.66)	(0.45, 0.66)	(0.44, 0.65)	(0.45, 0.65)
Lived with other parental or nonparental situation	0.52*** (0.45, 0.60)	0.54*** (0.47, 0.63)	0.54*** (0.47, 0.63)	0.54*** (0.46, 0.62)	0.53*** (0.46, 0.62)	0.53*** (0.46, 0.61)	0.54*** (0.47, 0.62)
Mom had first baby before age 18	0.52*** (0.45, 0.61)	0.53*** (0.46, 0.62)	0.52*** (0.45, 0.61)	0.53*** (0.45, 0.62)	0.52*** (0.45, 0.61)	0.53*** (0.45, 0.61)	0.53*** (0.45, 0.62)
Mother worked full- or part-time	1.27** (1.10, 1.45)	1.27** (1.10, 1.46)	1.27** (1.10, 1.47)	1.28** (1.11, 1.47)	1.28** (1.11, 1.47)	1.27** (1.10, 1.47)	1.27** (1.10, 1.46)
Race/Ethnicity (ref: Non-Hispanic white)							
Hispanic	0.37*** (0.31, 0.44)	0.37*** (0.31, 0.44)	0.37*** (0.31, 0.44)	0.37*** (0.31, 0.44)	0.37*** (0.31, 0.44)	0.37*** (0.31, 0.44)	0.37*** (0.31, 0.44)
Non-Hispanic Black	0.67*** (0.57, 0.80)	0.68*** (0.57, 0.81)	0.67*** (0.56, 0.80)	0.67*** (0.57, 0.80)	0.67*** (0.57, 0.81)	0.67*** (0.57, 0.80)	0.67*** (0.57, 0.80)
Non-Hispanic other or mixed race	1.09 (0.84, 1.41)	1.07 (0.82, 1.39)	1.06 (0.82, 1.36)	1.06 (0.82, 1.37)	1.04 (0.81, 1.35)	1.05 (0.81, 1.35)	1.06 (0.82, 1.37)
Birth year	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.01)	0.99 (0.98, 1.01)	0.99 (0.98, 1.00)

Notes: *p<0.05, **p<0.01, ***p<0.001. Coefficients are presented as odds ratios. 95% confidence intervals are presented in parentheses.

Table 3. Odds ratios from logistic regressions of on-time high school graduation on age at first sex and sociodemographic controls, with and without controls for unwanted and nonconsensual first sex.

	Model 1 (n=12,728)	Model 2 (n=12,562)	Model 3 (n=12,518)	Model 4 (n=12,564)	Model 5 (n=12,561)	Model 6 (n=12,564)	Model 7 (n=12,563)
Age at first sex	1.01* (1.00, 1.03)	1.01 (0.99, 1.03)	1.02 (0.99, 1.03)	1.01 (0.99, 1.03)	1.02 (0.99, 1.03)	1.01* (1.00, 1.03)	1.01 (1.00, 1.03)
Involuntary first sex	-	0.63*** (0.50, 0.79)	-	-	-	-	-
Unwanted first sex	-	-	0.74** (0.62, 0.88)	-	-	-	-
Forced first sex	-	-	-	0.51*** (0.39, 0.67)	-	-	-
Coerced first sex	-	-	-	-	0.83* (0.71, 0.96)	-	-
Given alcohol/drugs during first sex	-	-	-	-	-	0.66** (0.50, 0.88)	-
Threatened with physical violence during first sex	-	-	-	-	-	-	0.37*** (0.26, 0.51)
<i>Sociodemographic controls</i>							
Mother's education (ref: less than high school)							
High school or GED	2.00*** (1.70, 2.35)	2.01*** (1.71, 2.36)	2.01*** (1.71, 2.37)	2.01*** (1.71, 2.37)	2.01*** (1.71, 2.37)	2.02*** (1.72, 2.38)	2.02*** (1.72, 2.38)
Some college	2.42*** (2.04, 2.88)	2.43*** (2.03, 2.91)	2.42*** (2.02, 2.90)	2.45*** (2.06, 2.93)	2.44*** (2.04, 2.91)	2.46*** (2.06, 2.93)	2.46*** (2.06, 2.93)
Bachelor's degree or higher	3.25*** (2.64, 4.00)	3.27*** (2.64, 4.07)	3.23*** (2.60, 4.00)	3.26*** (2.64, 4.03)	3.24*** (2.62, 4.01)	3.26*** (2.64, 4.03)	3.28*** (2.65, 4.05)
Family composition at age 14 (ref: lived with both biological or adoptive parents)							
Lived with biological mother and stepfather	0.65*** (0.54, 0.78)	0.66*** (0.55, 0.79)	0.66*** (0.55, 0.79)	0.66*** (0.55, 0.79)	0.66*** (0.55, 0.80)	0.66*** (0.54, 0.79)	0.66*** (0.55, 0.79)

Lived with other parental or nonparental situation	0.55*** (0.47, 0.64)	0.56*** (0.48, 0.65)	0.56*** (0.48, 0.66)	0.56*** (0.48, 0.65)	0.56*** (0.48, 0.65)	0.56*** (0.48, 0.65)	0.56*** (0.48, 0.65)
Mom had first baby before age 18	0.67*** (0.58, 0.77)	0.67*** (0.58, 0.78)	0.67*** (0.58, 0.78)	0.67*** (0.58, 0.78)	0.67*** (0.58, 0.77)	0.67*** (0.58, 0.78)	0.67*** (0.58, 0.78)
Mother worked full- or part-time	1.25** (1.10, 1.43)	1.27*** (1.11, 1.44)	1.27*** (1.12, 1.45)	1.28*** (1.13, 1.46)	1.28*** (1.12, 1.45)	1.29*** (1.13, 1.47)	1.27** (1.12, 1.45)
Race/Ethnicity (ref: Non-Hispanic white)							
Hispanic	0.52*** (0.44, 0.62)	0.53*** (0.44, 0.63)	0.53*** (0.45, 0.63)	0.53*** (0.44, 0.63)	0.53*** (0.45, 0.63)	0.52*** (0.44, 0.62)	0.53*** (0.45, 0.63)
Non-Hispanic Black	0.69*** (0.57, 0.84)	0.70*** (0.57, 0.85)	0.70*** (0.57, 0.85)	0.70*** (0.57, 0.85)	0.70*** (0.57, 0.85)	0.68*** (0.56, 0.83)	0.70*** (0.57, 0.85)
Non-Hispanic other or mixed race	0.83 (0.66, 1.03)	0.81 (0.65, 1.01)	0.82 (0.65, 1.02)	0.83 (0.66, 1.04)	0.82 (0.66, 1.03)	0.82 (0.65, 1.02)	0.83 (0.67, 1.04)
Birth year	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)

Notes: *p<0.05, **p<0.01, ***p<0.001. Coefficients are presented as odds ratios. 95% confidence intervals are presented in parentheses.

Robustness Checks

I conduct three robustness checks to assess for possible alternative explanations for the association between unwanted and nonconsensual first sex and educational attainment. First, experiences following first sex may differ for survivors of childhood sexual violence compared to adolescent and young adult survivors of unwanted and nonconsensual first sex. Childhood sexual violence is more likely to be perpetrated by adult family members or family friends (Finkelhor and Ormrod 2000), and may happen in the context of frequent and severe sexual abuse. In order to rule out the possibility that these results are being driven by a select sample of very young survivors with severe histories of chronic abuse, I restricted the sample to include only those who experienced unwanted or nonconsensual first sex at age 10 or older, when sexual violence is more likely to be perpetrated by other adolescents (Finkelhor and Ormrod 2000). The results are unchanged when restricting to this older sample.

Second, as prior studies have found associations between sexual shame and religiosity (Garceau and Ronis 2017; Marcinechová and Záhorcová 2020), it is possible that the relationship between unwanted or nonconsensual first sex and decreased educational attainment could be limited to the sample of individuals who had a religious upbringing. I assess for this possibility using the only variable assessing for religiosity in adolescence—the religion in which one was raised—asked across survey waves. I consider respondents to be religious growing up if they were raised in any religious tradition, regardless of denomination, and not religious if they were raised in “no religion.” Results are robust to including being raised in a religious tradition. In order to account for the imperative placed on virginity before marriage espoused by select religious denominations, I also tested a more rigorous specification comparing participants who were raised in these religious denominations (Baptist, Fundamentalist, or Catholic) to those who were not. Results are also robust to this specification of childhood religiosity.

Finally, individuals who report at least one experience of sexual violence are at an increased risk of having multiple subsequent violent experiences, including experiencing multiple instances of sexual violence (Campbell et al. 2008; Huang and Gibson 2019; Santelli et al. 2018). To test for the possibility that the results can be explained by later forced or coerced sex (following sexual initiation), I control for whether the respondent ever had a subsequent experience of sexual violence. Results are robust to the inclusion of later sexual violence as a control. Interestingly, later sexual violence is also significantly associated with decreased odds of completing the next level of education, and decreased odds of on-time high school education, across all models. This suggests that later sexual violence is also important for understanding the relationship between educational attainment and sexual violence. However, I am unable to pinpoint if the experience of sexual violence after first sex that they reported occurred prior to or after achieving the educational outcome in the same way I can for their first sexual experience.

DISCUSSION

Recent work on gender-based violence has contributed to our understanding of the consequences of early life sexual violence, including for later life relationship outcomes (Carbone-Lopez 2012), chronic disease and physical health (McCarthy-Jones et al. 2019; Santaularia et al. 2014), and, relevant to this study, acute educational outcomes (Hagan and Foster 2001; Mengo and Black 2016; Potter et al. 2018). This study contributes to the literature on gender-based violence and the life course by describing the educational outcomes of survivors of unwanted and/or nonconsensual first sex, an often overlooked yet important gendered milestone in the transition to adulthood (Carpenter 2005). In my analyses, I find that women's experiences of unwanted and nonconsensual first sex are associated with decreased educational attainment and lower odds of on-time high school graduation, net of sociodemographic factors related to education selection.

Traumatic Stress

I find that all forms of unwanted and nonconsensual first sex are associated with lower odds of graduating from high school on-time. Although we cannot test for effects of trauma and related symptomatology on educational attainment due to limitations with the NSFG data, traumatic stress may be a possible mechanism explaining this association. Traumatic stress is common in survivors of sexual violence, with estimates ranging from 30% to over 90% of survivors meeting criteria for post-traumatic stress disorder (PTSD) at some time following the assault (Jina and Thomas 2013). Symptoms of PTSD, including avoidance behaviors, trouble concentrating, and memory problems, may affect the ability of adolescents and young adults to meet educational milestones closely following the experience of traumatic first sex (Center for Substance Abuse Treatment 2014). PTSD is also commonly co-morbid with other mood and anxiety disorders that affect well-being and academic achievement (Jina and Thomas 2013). By disrupting everyday functioning, the traumatic stress milieu associated with constrained autonomy at sexual initiation may acutely affect educational goals, such as earning a high school degree with one's peers.

In addition to the acute effects of trauma, the long run consequences of traumatic stress, including poor coping and persistent mood and cognitive problems, may affect cumulative educational attainment. Interestingly, the two forms of nonconsensual first sex that are associated with lower educational attainment across all models, forced first sex and first sex involving threats of physical violence, involve the most severe forms of violence. Evidence suggests that the type, frequency, and duration of PTSD symptoms are associated with the severity of violent experiences, with forced sex, sex involving injuries, and sex involving threats that produce substantial fear associated with the most severe forms of traumatic stress (Johnson, Pike, and Chard 2001; Wolfe, Sas, and Wekerle 1994). This may explain why only forced first sex and first sex under threat of violence are associated with decreased cumulative education. It is also possible that, although PTSD symptoms may wane over time, acute traumatic stress associated

with delayed completion of high school may cumulatively affect educational attainment by causing young women to delay enrollment in college or not enroll in college altogether. Prior research demonstrates that delays and gaps in academic enrollment are deleterious to educational attainment (Goldrick-Rab 2006; Milesi 2010). The lack of longitudinal data in the NSFG, including measures of early life depression, anxiety, and PTSD symptoms, make it difficult to understand the dynamic mental health effects of early life sexual trauma.

Although the #MeToo movement has been instrumental in challenging sexual violence stigma and its consequences, the survivors of unwanted and/or non-consensual first sex in my sample are unlikely to have benefited from this social movement, as data were collected between 2011–2017 and 99.9% of the respondents had their first sexual experience prior to 2017. Sexual violence stigma, including feelings of self-blame and guilt for the sexual violence, may also interfere with the academic functioning of survivors of unwanted and nonconsensual first sex. During a time in which young people are working to form their identities as they march toward adulthood, sexual projects that center empowerment and responsibility are central to constructing sexual identities and becoming legible sexual citizens (Hirsch and Khan 2020; Khan et al. 2018). Labeling experiences as sexual assaults or sexual violence may threaten the identity formation projects of young adults, as lack of control over one's body and sex life challenges the construction of a competent, empowered sexual identity (Khan et al. 2018). Karin Martin (1996) describes a similar process for adolescent girls who experience coercion and pressure at first sex. By reducing their first sexual experience down to the phrase, "it just happened," these adolescent girls resist labeling their first sexual experience with terms like rape and sexual assault that threaten their formation of a positive sexual subjectivity. However, despite resisting these violent and coercive labels, Martin finds that negative first sexual experiences are connected to decreased self-esteem for adolescent girls.

Avoiding labeling experiences of unwanted and nonconsensual first sex as violence may result in harm, as young women may not receive needed help (Khan et al. 2018), and may result in exacerbated feelings of shame and guilt. Indeed, internalized guilt, self-blame, shame, and sexual violence stigma are all associated with exacerbated trauma symptoms (Schmitt et al. 2021; Wolfe et al. 1994). However, labeling experiences as violent and seeking help for trauma are also fraught experiences, as demonstrated by Paige Sweet in her work with survivors of domestic violence who experience trauma anew when seeking legibility “through performances of trauma and recovery” (Sweet 2021). Thus, survivors of unwanted and nonconsensual first sex may have difficulty navigating their way through an educational system that is not equipped to help them grapple with the complexities of trauma survivorship and sexual violence stigma.

Virginity Norms

Another possible mechanism through which forced or coerced first sex may be associated with decreased educational attainment is through the stigma of violating local norms related to virginity. Half of the women in these analyses experienced nonconsensual or unwanted first sex in the late 1990s and early 2000s, when abstinence-only sex education programs rose to prominence. In a purported attempt to reduce pregnancies and sexually transmitted infections among adolescents, Title V, authorized through the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), allocated substantial federal government funding for abstinence-only education, and required states to make similar investments in educational programs exclusively focused on teaching sexual abstinence until marriage (Trenholm et al. 2007). In her interviews with abstinence-only sex educators and parents who support abstinence-only education, Kristin Luker (2006) found that, beyond concerns about sexually transmitted infections and young pregnancies, socially conservative adults were primarily concerned with the “moral harm” of premarital sex. Thus, in addition to the stigma associated with experiencing sexual violence, those who had unwanted and nonconsensual first sexual experiences during high

school risked additional labeling as “bad girls” by peers and teachers, especially if they were embedded in high school systems teaching abstinence-only sex education (García 2009).

Although sexual double standards sanctioning sex before marriage for women have lessened in the last half century, evidence suggests that new double standards have taken their place, including policing girls and young women who are deemed to have sex too young or outside the context of a committed relationship (Crawford and Popp 2003; Risman and Schwartz 2002).

At the college level, young women who had nonconsensual and/or unwanted first sex, especially if that sex occurred in the context of a nonromantic or hookup relationship, were at risk of being labeled “sluts” due to a pervasive “slut stigma” deployed against young women who were seen as shirking the gendered relational imperative required for women to participate in sexual behavior (Hamilton and Armstrong 2009). This social labeling process has deep sociological roots in the sexual double standard, whereby women are expected to avoid certain sexual situations (casual, non-monogamous sex for the purpose of deriving pleasure) and to gatekeep men’s sexual access (Hamilton and Armstrong 2009; Risman and Schwartz 2002; Schalet 2011). However, putting the onus of avoiding sex onto women puts survivors of unwanted and nonconsensual sex at risk of victim blaming and sexual violence stigma when their sexual wants and choices are violated.

As virginity norms are more likely to be salient in communities of origin, especially local religious communities, violation of social norms related to virginity are more likely to affect on-time high school completion. However, as high school non-completion eliminates the possibility of college attendance, these local norms may also have cumulative effects on educational attainment. Future research using datasets with rich peer and contextual data, such as the National Longitudinal Study of Adolescent to Adult Health (Add Health), should assess for impacts of school and community context on the educational outcomes of survivors of early sexual violence.

Age at First Sex

Although previous literature has proposed several mechanisms to explain the relationship between early age at sexual debut and decreased educational attainment, including early childbearing and selection into sex among less academically inclined youth (Parkes et al. 2010; Schvaneveldt et al. 2001; Spriggs and Halpern 2008), the potential role of sexual violence and trauma has not been systematically explored. In this paper, I demonstrate that survivors of unwanted and nonconsensual first sex are younger than their peers who had wanted and voluntary first sex. In exploratory analyses, I find that unwanted and nonconsensual first sex may partially mediate the relationship between age at first sex and on-time high school graduation. Although unwanted and nonconsensual first sex do not mediate the relationship between age at first sex and cumulative educational attainment, forced first sex and first sex involving threats of physical violence still explain some of the variation in educational attainment net of age at first sex. Although more sophisticated analyses are required to test whether violence and trauma mediate the relationship between age at first sex and educational attainment, the results presented here make a case for consideration of sexual violence in future studies of sexual debut and educational achievement.

CONCLUSION

This study adds to the bodies of literature on the life course consequences of early life violence and importance of sexual debut for social functioning by leveraging data on an experience common for girls and young women—nonconsensual and unwanted sexual debut. First sex is an important U.S. cultural milestone, with implications for the transition to adulthood and identity formation. As violence is associated with early exits from adolescent roles, including school enrollment, understanding the relationship between unwanted and nonconsensual first sex and the educational outcomes of young people is of key importance to providing supportive resources and programing for students who have sexual experiences that

they did not want or choose. Educational settings need to work to positively support young people who have had early experiences of sexual violence by acknowledging the prevalence of trauma, providing supportive mental health and educational programming that challenges sexual violence stigma and sexual double standards, and works to prevent sexual violence through early comprehensive sex education that centers discussions of gender, desire, consent, power, control, and coercion (Hlavka 2014).

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Appendix Table 1. Odds ratios from ordinal logistic regressions of educational attainment on six measures of nonconsensual and unwanted first sex and sociodemographic controls.

	Model 1 (N=9,574)	Model 2 (N=9,538)	Model 3 (N=9,578)	Model 4 (N=9,568)	Model 5 (N=9,578)	Model 6 (N=9,577)
Involuntary first sex	0.86 (0.70, 1.08)	-	-	-	-	-
Unwanted first sex	-	0.87 (0.72, 1.04)	-	-	-	-
Forced first sex	-	-	0.66** (0.51, 0.85)	-	-	-
Coerced first sex	-	-	-	1.06 (0.90, 1.25)	-	-
Given alcohol/drugs during first sex	-	-	-	-	1.00 (0.78, 1.30)	-
Threatened with physical violence during first sex	-	-	-	-	-	0.47*** (0.32, 0.68)
<i>Sociodemographic controls</i>						
Mother's education (ref: less than high school)						
High school or GED	1.90*** (1.61, 2.25)	1.88*** (1.60, 2.20)	1.88*** (1.60, 2.20)	1.88*** (1.60, 2.20)	1.87*** (1.60, 2.20)	1.88*** (1.60, 2.21)
Some college	3.20*** (2.70, 3.78)	3.14*** (2.67, 3.70)	3.18*** (2.70, 3.74)	3.14*** (2.67, 3.70)	3.15*** (2.68, 3.71)	3.18*** (2.70, 3.75)
Bachelor's degree or higher	6.22*** (5.03, 7.69)	6.05*** (4.89, 7.47)	6.10*** (4.94, 7.53)	6.07*** (4.92, 7.50)	6.09*** (4.94, 7.51)	6.12*** (4.96, 7.56)
Family composition at age 14 (ref: lived with both biological or adoptive parents)						
Lived with biological mother and stepfather	0.51*** (0.42, 0.62)	0.52*** (0.43, 0.63)	0.52*** (0.43, 0.63)	0.52*** (0.43, 0.63)	0.52*** (0.43, 0.62)	0.52*** (0.43, 0.63)

Lived with other parental or nonparental situation	0.51*** (0.44, 0.59)	0.51*** (0.45, 0.59)	0.51*** (0.44, 0.59)	0.51*** (0.44, 0.58)	0.51*** (0.44, 0.58)	0.51*** (0.45, 0.59)
Mom had first baby before age 18	0.52*** (0.44, 0.60)	0.51*** (0.44, 0.60)	0.51*** (0.44, 0.60)	0.51*** (0.44, 0.60)	0.51*** (0.44, 0.60)	0.51*** (0.44, 0.60)
Mother worked full- or part-time	1.23** (1.07, 1.41)	1.24** (1.08, 1.43)	1.25** (1.09, 1.44)	1.24** (1.08, 1.43)	1.25** (1.08, 1.43)	1.24** (1.08, 1.43)
Race/Ethnicity (ref: Non-Hispanic white)						
Hispanic	0.39*** (0.32, 0.46)	0.38*** (0.32, 0.46)	0.38*** (0.32, 0.45)	0.38*** (0.32, 0.46)	0.38*** (0.32, 0.46)	0.38*** (0.32, 0.46)
Non-Hispanic Black	0.68*** (0.57, 0.81)	0.68*** (0.57, 0.81)	0.68*** (0.57, 0.81)	0.68*** (0.57, 0.81)	0.68*** (0.57, 0.81)	0.68*** (0.57, 0.81)
Non-Hispanic other or mixed race	1.17 (0.89, 1.53)	1.13 (0.87, 1.48)	1.13 (0.86, 1.47)	1.13 (0.86, 1.47)	1.12 (0.86, 1.47)	1.13 (0.87, 1.48)
Birth year	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)

Notes: *p<0.05, **p<0.01, ***p<0.001. Coefficients are presented as odds ratios. 95% confidence intervals are presented in parentheses.

Appendix Table 2. Relative risk ratios from multinomial logistic regressions of educational attainment on forced first sex and sociodemographic controls (reference group less than high school; N = 9,578).

	High School Degree	Some College	BA+
Forced first sex	0.53* (0.32, 0.86)	0.58* (0.36, 0.92)	0.35*** (0.21, 0.60)
<i>Sociodemographic controls</i>			
Mother's education (ref: less than high school)			
High school or GED	1.95*** (1.52, 2.48)	2.69*** (2.07, 3.51)	2.94*** (2.24, 3.86)
Some college	2.71*** (1.97, 3.72)	6.59*** (4.82, 9.03)	8.82*** (6.53, 11.92)
Bachelor's degree or higher	1.85** (1.17, 2.93)	4.74*** (2.92, 7.69)	13.79*** (8.84, 21.52)
Family composition at age 14 (ref: lived with both biological or adoptive parents)			
Lived with biological mother and stepfather	1.30 (0.90, 1.89)	0.93 (0.63, 1.38)	0.41*** (0.27, 0.64)
Lived with other parental or nonparental situation	1.11 (0.86, 1.44)	0.69** (0.52, 0.91)	0.38*** (0.29, 0.50)
Mom had first baby before age 18	0.68** (0.52, 0.89)	0.56*** (0.43, 0.72)	0.28*** (0.21, 0.39)
Mother worked full- or part-time	1.54** (1.21, 1.96)	1.60*** (1.27, 2.01)	1.72*** (1.34, 2.21)
Race/Ethnicity (ref: Non-Hispanic white)			
Hispanic	0.32*** (0.23, 0.43)	0.27*** (0.20, 0.36)	0.15*** (0.11, 0.22)
Non-Hispanic Black	0.64** (0.46, 0.88)	0.69* (0.49, 0.97)	0.40*** (0.27, 0.57)
Non-Hispanic other or mixed race	0.88 (0.54, 1.43)	0.67 (0.41, 1.10)	0.98 (0.59, 1.64)
Birth year	1.02 (1.00, 1.04)	1.02 (1.00, 1.04)	1.00 (0.98, 1.02)

Notes: *p<0.05, **p<0.01, ***p<0.001. Coefficients are presented as odds ratios. 95% confidence intervals are presented in parentheses.

Appendix Table 3. Relative risk ratios from multinomial logistic regressions of educational attainment on first sex with threats of physical force and sociodemographic controls (reference group less than high school; N = 9,577).

	High School Degree	Some College	BA+
Threatened with physical violence during first sex	0.50* (0.29, 0.85)	0.31*** (0.17, 0.58)	0.24*** (0.12, 0.47)
<i>Sociodemographic controls</i>			
Mother's education (ref: less than high school)			
High school or GED	1.95*** (1.52, 2.49)	2.70*** (2.07, 3.51)	2.95*** (2.25, 3.87)
Some college	2.72*** (1.98, 3.75)	6.67*** (4.86, 9.14)	8.88*** (6.56, 12.03)
Bachelor's degree or higher	1.86** (1.17, 2.95)	4.80*** (2.94, 7.84)	13.89*** (8.88, 21.71)
Family composition at age 14 (ref: lived with both biological or adoptive parents)			
Lived with biological mother and stepfather	1.30 (0.89, 1.88)	0.93 (0.63, 1.38)	0.41*** (0.27, 0.63)
Lived with other parental or nonparental situation	1.11 (0.86, 1.44)	0.69* (0.52, 0.92)	0.38*** (0.29, 0.51)
Mom had first baby before age 18	0.68** (0.52, 0.88)	0.56*** (0.43, 0.72)	0.28*** (0.21, 0.38)
Mother worked full- or part-time	1.53** (1.20, 1.95)	1.58*** (1.26, 1.99)	1.69*** (1.32, 2.18)
Race/Ethnicity (ref: Non-Hispanic white)			
Hispanic	0.32*** (0.24, 0.43)	0.27*** (0.20, 0.36)	0.16*** (0.11, 0.22)
Non-Hispanic Black	0.64** (0.46, 0.88)	0.69* (0.49, 0.97)	0.40*** (0.28, 0.57)
Non-Hispanic other or mixed race	0.88 (0.54, 1.44)	0.68 (0.42, 1.10)	0.99 (0.59, 1.64)
Birth year	1.02 (1.00, 1.04)	1.02 (1.00, 1.04)	1.00 (0.98, 1.02)

Notes: *p<0.05, **p<0.01, ***p<0.001. Coefficients are presented as odds ratios. 95% confidence intervals are presented in parentheses.

Appendix Table 4. Odds ratios from logistic regressions of on-time high school completion on six measures of nonconsensual and unwanted first sex and sociodemographic controls.

	Model 1 (N=13,298)	Model 2 (N=13,253)	Model 3 (N=13,300)	Model 4 (N=13,295)	Model 5 (N=13,301)	Model 6 (N= 13,300)
Involuntary first sex	0.60*** (0.48, 0.75)	-	-	-	-	-
Unwanted first sex	-	0.71*** (0.59, 0.84)	-	-	-	-
Forced first sex	-	-	0.49*** (0.37, 0.63)	-	-	-
Coerced first sex	-	-	-	0.79** (0.68, 0.92)	-	-
Given alcohol/drugs during first sex	-	-	-	-	0.64** (0.49, 0.84)	-
Threatened with physical violence during first sex	-	-	-	-	-	0.35*** (0.25, 0.49)
<i>Sociodemographic controls</i>						
Mother's education (ref: less than high school)						
High school or GED	2.02*** (1.73, 2.36)	2.03*** (1.73, 2.37)	2.03*** (1.74, 2.37)	2.03*** (1.74, 2.37)	2.03*** (1.74, 2.37)	2.03*** (1.74, 2.37)
Some college	2.47*** (2.08, 2.94)	2.46*** (2.08, 2.92)	2.49*** (2.11, 2.95)	2.48*** (2.10, 2.93)	2.49*** (2.10, 2.95)	2.49*** (2.11, 2.94)
Bachelor's degree or higher	3.35*** (2.74, 4.10)	3.31*** (2.71, 4.05)	3.34*** (2.75, 4.07)	3.33*** (2.74, 4.06)	3.35*** (2.75, 4.07)	3.36*** (2.76, 4.09)
Family composition at age 14 (ref: Lived with both biological or adoptive parents)						
Lived with biological mother and stepfather	0.63*** (0.53, 0.75)	0.64*** (0.53, 0.76)	0.64*** (0.53, 0.76)	0.64*** (0.53, 0.76)	0.63*** (0.53, 0.75)	0.64*** (0.53, 0.76)
Lived with other parental or nonparental situation	0.54*** (0.46, 0.63)	0.54*** (0.46, 0.63)	0.54*** (0.46, 0.63)	0.53*** (0.46, 0.62)	0.53*** (0.46, 0.62)	0.54*** (0.46, 0.63)

Mom had first baby before age 18	0.67*** (0.57, 0.77)	0.66*** (0.57, 0.77)	0.67*** (0.58, 0.77)	0.66*** (0.57, 0.77)	0.67*** (0.58, 0.77)	0.67*** (0.57, 0.77)
Mother worked full- or part-time	1.24** (1.10, 1.41)	1.25** (1.10, 1.42)	1.26*** (1.11, 1.43)	1.25** (1.10, 1.42)	1.26*** (1.11, 1.44)	1.25** (1.10, 1.42)
Race (ref: Non-Hispanic white)						
Hispanic	0.54*** (0.45, 0.64)	0.55*** (0.46, 0.65)	0.54*** (0.45, 0.64)	0.54*** (0.46, 0.64)	0.53*** (0.45, 0.64)	0.54*** (0.46, 0.64)
Non-Hispanic Black	0.71** (0.58, 0.86)	0.71** (0.58, 0.86)	0.71** (0.59, 0.86)	0.71** (0.58, 0.86)	0.69*** (0.57, 0.84)	0.71** (0.59, 0.86)
Non-Hispanic other or mixed race	0.78* (0.62, 0.98)	0.79* (0.63, 0.99)	0.80 (0.64, 1.01)	0.80 (0.63, 1.00)	0.79* (0.63, 0.99)	0.80 (0.64, 1.01)
Birth year	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)	1.02*** (1.01, 1.03)

Notes: *p<0.05, **p<0.01, ***p<0.001. Coefficients are presented as odds ratios. 95% confidence intervals are presented in parentheses.