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Understanding the Educational Attainment of Sexual Minority Women and Men*

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Abstract

National studies have not analyzed sexual identity disparities in high school completion, college enrollment, or college completion in the United States. Using Add Health data, we document the relationship between adult sexual orientation and each of these outcomes. Many sexual minority respondents experienced disadvantages in adolescent academic achievement, school experiences, and social environments. This translates into educational attainment in complex, gendered ways. We find that the socially privileged completely heterosexual identity predicts higher educational attainment for women, while for men it is often a liability. Mostly heterosexual and gay identities are educationally beneficial for men but not women. There are college completion disparities between gay and mostly heterosexual women and their completely heterosexual counterparts. Bisexual respondents, especially women, have particularly problematic outcomes. Adolescent experiences, attitudes, and social contexts explain some of these differences. From adolescence through college, sexual minority groups, but especially females, need intervention to reduce substantial educational disparities.

Keywords

Sexual minorities; education; stratification; gay; lesbian; bisexual

1. Introduction

Educational attainment is an important and dynamic social phenomenon. Strongly linked to later success in terms of income, occupational status, wealth, health, and life satisfaction, it is arguably more important now than in the past because of increasing income inequalities and the need for highly skilled workers (Mirowsky & Ross, 1998; Ross & Wu, 1995). Major sociodemographic dividing lines pattern educational outcomes. Socioeconomic, racial, and ethnic disparities in educational attainment follow the expected patterns, with higher-

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socioeconomic-status (Breen & Jonsson, 2005) and White (Everett, Rogers, Hummer, & Krueger, 2011) adults reporting more years of education. Gender patterns are in flux, with men's traditional educational attainment advantage having disappeared fairly recently, replaced by an advantage for women up through at least a college degree (Everett et al., 2011). In contrast, the economic returns to education vary by gender, with men experiencing higher incomes than women at a given level of educational attainment (Blau & Kahn, 2007). But perhaps surprisingly, we know little about the educational implications of another important sociodemographic dividing line: sexual orientation.

In this study, we help address this gap, examining several educational attainment outcomes across sexual minority identity groups using the nationally representative National Longitudinal Study of Adolescent to Adult Health (Add Health). Past research on sexual orientation and educational attainment is quite limited, and Russell (2005) has argued that we need more research on the influence of sexual minority status on “educational milestones” among young people. We compare educational attainment outcomes across completely heterosexual, mostly heterosexual, bisexual, and gay respondents as self-identified in early adulthood (ages 24–32). To understand drivers of educational attainment disparities, we also examine a variety of individual, family, school, and neighborhood factors that shape young people's schooling experiences. This responds to Russell's (2005) call for more attention to factors at multiple contextual levels that predict risk and resilience among sexual minorities. New U.S. studies have examined some educational attainment disparities by sexual attraction and same-sex sexual contact (Ueno, Roach, & Peña-Talamantes, 2013; Walsemann, Lindley, Gentile, & Welihindha, 2014; Watson & Russell, 2014), but no study has analyzed sexual orientation/identity disparities.

2. Background

In the larger literature on educational attainment, we know more about the attainment of educational milestones than about the fine-grained, in-school processes that may contribute to that attainment. Interestingly, in the small literature on sexual minority status and educational attainment, the opposite is often true. Comparatively much is known about the experiences, such as bullying and school climate problems, of sexual minority adolescents and college students in their educational settings and other social settings during secondary and postsecondary schooling (e.g., Birkett, Espelage, & Koenig, 2009; Carpenter, 2009; Kosciw, Greytak, & Diaz, 2009; Rankin, 2005; Rivers, 2001; Russell, Seif, & Truong, 2001). But there has been less research on educational attainment comparing sexual minorities to others. Much of what we know about the educational attainment of U.S. sexual minorities comes from population-based samples of adults (Barrett, Pollack, & Tilden, 2002; Black, Gates, Sanders, & Taylor, 2000; Carpenter, 2005), which combine a wide variety of cohorts and sometimes define sexual minorities and their comparison groups in potentially problematic ways detailed below.

2.1. Educational attainment in adulthood

Analyses of educational attainment have yielded decidedly mixed findings about the size and direction of differences between sexual minorities and others. Black and colleagues' (2000) analyses of 1990 U.S. Census data found that women and men in same-sex

cohabiting couples were more likely to have finished college than people of the same gender who were married to an opposite-sex spouse. The authors found that these differences were not due to parents' education levels, which were similarly distributed across groups. Unpartnered sexual minority individuals, people in same-sex relationships who were not cohabiting, and sexual minorities in opposite-sex relationships were not included. Black and colleagues (2000) also analyzed the 1992 General Social Survey, which identified sexual minorities by the gender of the people a respondent has had sex with, finding a similar pattern of results when comparing sexual minority respondents to married people of the same gender. Their measure of sexual minority status did not capture bisexuality.

A later study focused on only one state but included bisexual populations. In a large representative survey of Californian adults aged 18-64 in 2001, Carpenter (2005) found educational advantages for gay and for unmarried (but not married) bisexual men compared to others. Results for women were fairly similar, with lesbian-identified women experiencing educational advantages in terms of both high school dropout and college completion and unmarried bisexual women having a higher proportion of Bachelor's degrees or more compared to heterosexual women. Carpenter (2005) also found that estimates of the relationship between sexual minority status and earnings often varied substantially by time period, suggesting that results from older cohorts may not apply to younger ones.

Carpenter (2008) investigated a representative sample of Australian women aged 18-23 in 1996. He found that lesbian women's prevalence of high school dropout and college completion was not significantly different from that of heterosexual women, but bisexual women were significantly overrepresented among high school dropouts compared to heterosexual women (there was no significant difference in college completion). In sum, U.S. data incorporating older cohorts suggest that some sexual minorities have more education than their heterosexual counterparts, though Australian data from a younger cohort find the opposite for some groups of women.

Three new studies of U.S. educational attainment analyzed the Add Health cohorts (grades 7-12 in 1994-1995). Two used sexual attraction to measure sexual minority status. Watson and Russell (2014) focused on differences among same-sex-attracted respondents, finding that those who were more engaged in middle or high school ended up with more years of education. Walsemann and colleagues (2014) found that depending on life course timing, some same-sex-attracted women and men experienced educational attainment disparities compared to their consistently opposite-sex-attracted counterparts. Ueno and colleagues (2013) focused instead on same-sex sexual contact. They identified educational disparities compared to same-sex others for women who had same-sex contact, but advantages for men who had same-sex contact in young adulthood but not the teen years. Together, these studies paint a complex picture of the educational outcomes of sexual minorities, finding that they depend on the definition and timing of same-sex experiences or attraction. This picture is less rosy than the one painted by the studies of older cohorts, which more often identified educational advantages for sexual minorities. Previous studies have not examined educational attainment by sexual orientation or identity, an important basis of sexual minority status.

2.2. Potential explanations for educational attainment disparities

Why might at least some groups of sexual minorities have higher levels of educational attainment? Hewitt (1995) and Barrett and colleagues (2002) suggest some possible explanations. Sexual minorities might choose to continue their education for longer than heterosexual people: “(1) as a way to avoid blue-collar occupations; (2) [because of] the relative comfort of college environments as compared to work environments; and (3) as a way to counterbalance the expected effects of homophobia” (Barrett et al., 2002, p. 166). Although educational attainment often pays off *financially* (Bloome & Western, 2011), sexual minorities may anticipate more *social* benefits to higher education than heterosexuals do. The social benefits highlighted here have to do with enabling self-selection away from discriminatory environments, which are a real threat to many adolescents and adults who identify as sexual minorities. This process of disproportionate persistence along educational pathways may begin in childhood, adolescence, or adulthood through greater academic achievement, it might mean that sexual minorities disproportionately aspire to receive more education, or it could be that sexual minorities choose to stay in relatively safer educational environments rather than leaving them, without long-term planning having occurred.

Another possible explanation for higher educational attainment among sexual minorities could be *selection into sexual minority self-identification*, e.g., differential likelihoods that people with different characteristics will identify as sexual minorities. If people from more privileged or politically/religiously liberal families and neighborhoods experience greater tolerance of sexual minorities (Hatzenbuehler, 2010; Kosciw et al., 2009; Morrison & Morrison, 2002; Oswald & Culton, 2003; Poon & Saewyc, 2009; Walch, Orlosky, Sinkkanen, & Stevens, 2010), they may be more likely to self-identify as sexual minorities in young adulthood rather than hiding alternative sexual preferences.

A social stratification perspective would expect the opposite trend: that sexual minorities should have *lower* educational attainment than completely heterosexual people. The minority stress hypothesis (Meyer, 1995, 2003) argues that people who identify with a minority status, such as gay or bisexual, inescapably experience chronic structural and interpersonal discrimination. Many other minority groups who are subjected to discrimination, such as African Americans, Latinos, Native Americans, and people with low socioeconomic status, experience substantial disparities in educational attainment (Everett et al., 2011; Hallinan, 1988). Some of the sources of these disparities, such as unequal school quality (Borman & Dowling, 2010; Downey, Von Hippel, & Broh, 2004), may not apply as directly to sexual minorities. But others, including stigma and discrimination affecting teachers' evaluations of students and their placement into tracking groups (Entwisle, Alexander, & Olson, 2004), may be directly applicable.

2.3. Gender, sexual identity, and educational attainment

The main exception to the educational disparities experienced by lower-status groups is gender, with young women now completing more education than men at many levels (Everett et al., 2011). Gender and sexual orientation are strongly linked in our culture (Theodore & Basow, 2000) in ways that may lead to gender differences in the relationship between sexual orientation and educational attainment. Morris (2008), Pascoe (2007), and

others have found that especially in lower socioeconomic status contexts, heteronormative masculinity requires a performance of both heterosexuality and disinterest in academic achievement. Thus, the heterosexuality of high-achieving boys is often questioned and high academic achievement stigmatized. Femininity is not as strongly tied to a requirement of disinterest in academic achievement (Morris, 2008), although this varies somewhat by social class and race (Bettie, 2003). Jones and Myhill (2004) found that teachers perceived academically high-achieving girls as gender-conforming “good girls,” but in contrast, the gender-conforming boys were underachievers. Teachers perceived that academically high-achieving boys were violating gender norms. These processes may depress academic achievement and aspirations among completely heterosexual teenage boys. Among girls, the social rewards associated with both heterosexuality and academic achievement in combination with the negative experiences of sexual minorities may lead more straightforwardly to disparities in educational attainment over time. In a contrasting perspective, research on same-sex-attracted teens has found that boys, more so than girls, have lower grade point averages (GPAs) and are less likely to take advanced courses than their other-sex-attracted counterparts (Pearson, Muller, & Wilkinson, 2007).

Because of the complex gendering of education and the link between sexual identity and gender, we expect to see different patterns of disparities in educational attainment outcomes between sexual minority women and men. Indeed, some of the literature on sexual minorities and education has identified substantial gender differences (Ueno et al., 2013; Walsemann et al., 2014), even though this is not true for all research (Black et al., 2000; Carpenter, 2005). Other studies have analyzed single-sex samples (Barrett et al., 2002; Carpenter, 2008) or pooled both genders together (Watson & Russell, 2014).

2.4. Educational experiences and social environments

Some literature on sexual minorities' educational attainment in adulthood does not attend to life course processes (Elder, 1994), which are likely to be important. Educational attainment is a process that usually begins in early childhood and goes through early adulthood (Stoops, 2003), with legal opportunities to end one's education beginning in mid-adolescence. Similarly, sexual identity formation is an emergent process throughout adolescence and into adulthood (Remafedi, Resnick, Blum, & Harris, 1992), so adolescent sexual attraction informs but is not completely correlated with adult sexual identity. Several of the potential explanations for the relationship between sexual orientation and educational attainment described above pinpoint adolescence as an important age for the formation of educational advantages that can shape later attainment, but childhood and young adulthood may be important developmental stages as well (Ueno et al., 2013).

Supporting the idea that earlier and later sexual orientation processes may have different educational implications, Barrett and colleagues (2002) found in a multi-city probability sample of men who have sex with men that gay identity or same-sex-oriented sexual behavior during adolescence predicted lower educational attainment than did identities and behaviors that first took shape in adulthood. This finding makes sense given the relatively high levels of victimization and stigma experienced by sexual minority youth during middle and high school (Rivers, 2001). Nationally representative research has supported the finding

that sexual minority teens suffer educational penalties. Using Add Health data from a nationally representative U.S. sample of middle and high school students, Russell and colleagues (2001) found that teens of both genders who reported sexual attraction to both women and men were educationally vulnerable: They reported lower grade point averages and more school troubles than teens who were only attracted to the opposite sex. Both-sex-attracted girls also reported more negative attitudes about school compared to other-sex-attracted girls. For girls but not boys, same-sex-attracted teens reported more negative school attitudes and more school troubles than opposite-sex-attracted teens. Especially for girls, both-sex-attracted teens also tended to be more vulnerable than other-sex-attracted teens in the family, peer, teacher, and social domains, and some of these relational factors explained the negative school outcomes faced by sexual minority teens.

Other research has focused on the internal and interpersonal *processes* through which compromised educational outcomes take shape for sexual minority teens. In a large Midwestern sample of junior high schoolers, Birkett and colleagues (2009) found that sexual minority youth were more likely than heterosexual youth to experience bullying and homophobic victimization, as well as depression, drug use, suicidality, and truancy. The bullying of sexual minority youth in school is often long-term and perpetrated by groups rather than individuals (Rivers, 2001). Its short-term mental health effects are more severe than long-term effects in adulthood (Rivers, 2001), suggesting that bullying may have the greatest impact on concurrent educational processes and outcomes.

Social contexts appear to shape these processes of bullying and victimization of sexual minority teens. In the study described above, Birkett and colleagues (2009) found that sexual minority teens whose schools had more positive climates or who did not experience homophobic victimization had less negative outcomes than those in less supportive environments. This suggests that school contexts are important for understanding the experiences of sexual minorities. Neighborhoods and communities also seem to matter. Analyzing a national survey of sexual minority teens, Kosciw and colleagues (2009) found that sexual minority teens in more rural areas and in communities with lower levels of adult educational attainment faced more victimization and homophobia in their schools than teens in other communities. Our study accounts for many of the contexts and processes described above in modeling the experiences of sexual minorities in adolescence.

As in high school, sexual minority students experience marginalization on college campuses (see Rankin, 2005 for a review). In Rankin's (2005) multi-campus survey, 36% of LGBT students reported having been harassed in the past year. This statistic, though alarming, is lower than in high schools (Rivers, 2001), supporting the idea that at least some college campuses may be safer spaces for sexual minorities than high schools are. In a large study of Harvard undergraduates from 1997-2001, Carpenter (2009) examined a wide variety of academic and social college experiences of sexual minorities as defined by lifetime sexual behavior. Bisexual, but not gay, women reported more educational risks in terms of study time, perceived importance of academics, and satisfaction with their college education. In contrast, sexual minority status predicted some more positive experiences among men. Our study does not include direct measures of college experiences, but our outcomes include both college enrollment and college degree completion contingent on enrollment.

2.5 Research questions

Reviewing the literature on sexual minorities' educational experiences leads to inconsistent and unexpected conclusions. We know that sexual minority teens experience high rates of bullying, victimization, depression, and other negative outcomes and end up with compromised educational outcomes and attitudes during middle and high school. We also know that relatively high levels of victimization and harassment persist in college, yet somehow gender and sexual minority category differences emerge with gay and bisexual men sometimes experiencing advantages compared to their heterosexual counterparts. Results are inconsistent when comparing female sexual minorities to heterosexual women. No study has examined “mostly heterosexual” people, who have been found to face disadvantages in other domains compared to completely heterosexual individuals (Austin, Roberts, Corliss, & Molnar, 2008; Berlan, Corliss, Field, Goodman, & Austin, 2010; Corliss et al., 2012; Hughes et al., 2010). The unexpected end result, according to older data sources and cohorts, is greater educational attainment at least for male and possibly for female sexual minority groups compared to their heterosexual counterparts. Analyses of younger cohorts paint a bleaker and more complicated picture for sexual minorities' educational outcomes, but no study has examined disparities by sexual orientation/identity. Especially as sexual minority status is often “invisible” to outsiders, self-identification is important as it may trigger processes that shape educational attainment.

Our study seeks to answer three research questions using recent, nationally representative data. *First*, do sexual minorities experience conditions in middle and high school that put them at risk for educational disadvantages? We examine the domains of educational aspirations and expectations, educational achievement, parental characteristics, and favorable school and neighborhood conditions. *Second*, do gay, bisexual, and mostly heterosexual women and men have higher educational attainment than their completely heterosexual same-sex peers? We analyze three important educational attainment outcomes: high school completion, college enrollment, and college completion among those who enrolled. *Third*, what explains any differences we find in educational attainment by sexual minority status? We consider selection processes (self-identified sexual minorities potentially coming from more educated families and more educated or liberal neighborhoods), academic and social experiences during middle and high school, and greater motivation on the part of sexual minorities to “escape” to the perceived more friendly environment of college and stay there. Our findings challenge extant research in several ways, and in some cases we can partially or fully explain why we find the educational disparities that we do.

3. Methods

3.1. Data

The data come from Waves I and IV of the National Longitudinal Study of Adolescent to Adult Health (Add Health; Harris et al., 2009). The Add Health survey is a nationally representative longitudinal study of U.S. adolescents that began in the fall of 1994, initially drawn from 80 high schools and 52 middle schools with unequal probabilities of selection. A random subsample of respondents and their parents, with some oversampled special

groups, were asked to fill out a longer in-home survey, the focus of our analyses (N=20,747; response rate was 79%). We do not use data from Waves II or III, which were conducted one and six years later respectively. Wave IV of the Add Health Survey was conducted 14 years after Wave I (2008-2009), when respondents were 29 years old on average. Interviewers located 92.5% of the original in-home sample, with a response rate of 80.3% (N=15,701). Probability weights allow analyses to be representative of U.S. students in grades 7 through 12 in 1994-1995.

3.2. Measures

3.2.1. Dependent Variable—We separately analyze three major milestones in educational attainment: high school completion, college attendance, and college completion among those who attended college. High school completion captures whether respondents reported having graduated from high school or receiving a GED versus not having graduated from high school (referent). College attendance measures whether respondents enrolled in any college or reported educational attainment of at least “some college,” versus those who have no college experience (referent). Note that respondents who did not complete high school may have enrolled in college. College completion is restricted to respondents who have enrolled in or completed some college and measures whether respondents successfully graduated from college with a Bachelor's degree.

3.2.2. Sexual Identity—We use sexual orientation/identity reported at Wave IV of the survey. Other common operationalizations of sexual minority status include attraction and sexual contact (e.g., Ueno et al., 2013; Walsemann et al., 2014). Relying on measures of same-sex attraction or sexual contact does not capture self-ascribed sexual orientation identities, which may relay different sets of risks and benefits. For many individuals, sexual attraction and behavior occur in private, potentially reducing their exposure to discriminatory interactions. Add Health's sexual orientation measure has been used to study disparities in a wide variety of outcomes (e.g., Hatzenbuehler, McLaughlin, & Slopen, 2013; Marshal, Friedman, Stall, & Thompson, 2009). We acknowledge that sexual identity is a dynamic process and that some individuals may change their sexual identity over time; however, identity reported at Wave IV represents the most current demographic characteristic of the respondents, and sexual identity is not available prior to Wave III. Supplementary analyses conducted using Wave III identity measures yielded similar results; however, using the Wave III sample results in a loss of 2,460 respondents, which reduces the statistical power of the analysis for particular subgroups (especially mostly heterosexual and bisexual men; gay men and women). Our measure of sexual identity at Wave IV is derived from a question that asks respondents if they identify as completely heterosexual (referent), mostly heterosexual, bisexual, mostly gay (homosexual), or completely gay (homosexual). Supplementary analyses revealed that our results did not differ between completely gay and mostly gay identified respondents; thus, these identities are combined into a single category.

3.2.3. Explanatory Pathways—We investigate the role of several potential explanatory pathways in the relationship between sexual identity and educational outcomes including parent characteristics, adolescent school experiences, and adolescent environments.

3.2.3.1. Parent characteristics: We include two measures derived from the parent survey portion of the Add Health data (because 15% of parents did not complete the survey, missing data indicators are included for each variable): parental educational attainment and parents' disappointment if their child does not go to college. Respondents' parent education is coded as a series of dichotomous variables, which measure the mean level of years of education of both parents, or the highest year of education completed of a single parent if both are not available. Parent education level is coded as less than a high school degree (0 to 11 years), high school degree (12 years), some college (13 to 15 years), college degree or more (16 years or more, referent), or missing. Parent expectations are derived from a measure which asks parents, "How disappointed would you be if [respondent] did not graduate from college?" Answers are coded as dichotomous variables, which measure whether parents would be very disappointed, somewhat disappointed, not disappointed (referent), or missing.

3.2.3.2. Adolescent school experiences: Grade point average (GPA) is coded as a series of dichotomous variables that measures respondents' self-reported GPA at Wave I: GPA of 0 to 1.9, 2 to 2.9, 3 to 3.49, 3.5 or greater (referent), or missing. School attachment is a summed scale of responses to the following questions: "How much do you agree or disagree with the following statements: you feel close to people at your school; you feel like you are a part of your school; you are happy to be at your school; the teachers at your school treat students fairly." Answers range from strongly agree (1) to strongly disagree (5) and are reverse coded so higher numbers indicate higher school attachment. The scale ranges from 1 to 17 and has an alpha of 0.74.

School lack of safety is derived from an item that asked respondents, "How much do you agree or disagree with the following: You feel safe at your school?" Students' perceptions of lower school prejudice is derived from a question that asks respondents, "How much do you agree or disagree with the following: Students at your school are prejudiced." Responses to these measures range from strongly agree (1) to strongly disagree (5), and the prejudice measure was reverse coded so that higher score indicate more perceived prejudice. College aspirations are derived from a question that asks respondents, "On a scale of 1 to 5, where 1 is low and 5 is high, how much do you want to go to college?" College expectations are derived from a question that asks respondents, "On a scale of 1 to 5, where 1 is low and 5 is high, how likely is it that you will go to college?"

Victimization is coded as a binary variable that measures "which of the following things happened in the last month: someone pull a knife or gun on you; someone shot or stabbed you; someone slapped, hit, choked, or kicked you; you were beaten up?" Respondents who report at least one of these incidents are coded as being victimized in the last 12 months.

3.2.3.3. Adolescent environments: GPS coordinates were taken at the time of the Wave I in-home interview that were then linked to a variety of contextual-level data sources, such as the U.S. Census, the national Council of Churches, the Center for Disease Control and Prevention, and several other sources. We include four measures of the social environment: percent conservative religious residents in a respondent's census tract (which is frequently used in the literature as a proxy for neighborhood), percent who voted for a Republican

governor in 1995 in a respondent's census tract, percent with college degrees in a respondent's census tract, and whether the respondent attended an urban school at Wave I. Urbanicity is coded as a set of indicator variables that measures whether the school is an urban location, a rural location, or other such as suburban or small town (referent)

3.2.3. Controls—Unless otherwise noted, all analyses are split by the respondent's gender. We also control for race/ethnicity and age. Race/ethnicity is coded as a series of dummy variables that measure whether respondents identify as non-Hispanic White (referent), non-Hispanic Black, Hispanic, non-Hispanic Asian, or other race. Age at Wave IV is coded as a continuous variable that ranges from 24 to 34 years of age. By this age, most respondents should have completed their lifetime educational attainment (Stoops, 2003)

3.3. Analyses

Our sample is restricted to respondents who were followed up at Wave IV and have complete information on their educational attainment at Wave IV and other covariates used in the analysis. We also exclude 22 individuals who reported that they were unsure of their sexual orientation or did not answer the question. Our final sample yields 6,722 male respondents and 7,612 female respondents (91.3% of all respondents interviewed at Wave IV). All analyses use probability weights to make findings nationally representative of students in grades 7-12 in 1994-1995, as well as adjustments for clustering and stratification in the survey design.

First, we present descriptive statistics for the female population overall and by sexual orientation, followed by the same for men. We perform a series of design-based F-tests that compare means on all variables of mostly heterosexual, bisexual, and gay/mostly gay respondents to completely heterosexual respondents. To answer research question 1, we investigate whether sexual minorities experienced significant educational disadvantages in middle and high school in terms of educational aspirations and expectations, educational achievement, parental characteristics, and favorable school and neighborhood conditions. We then estimate nested multivariate logistic regression models to answer our two other research questions, examining disparities by sexual orientation in high school completion, college enrollment, and college completion among those who enrolled. Model 1 controls for age and race/ethnicity to estimate educational disparities by sexual minority status, addressing research question 2. The remaining models introduce additional variables that may explain the educational disparities we find, addressing research question 3. Model 2 includes controls for parental educational attainment and college expectations; Model 3 controls for GPA; Model 4 controls for school attachment, perceived school safety, perceived school prejudice, college expectations, desire to go to college, and victimization; Model 5 controls for measures of the adolescent social environment; and Model 6 combines all measures.

4. Results

4.1. Do sexual minorities have more educational risk?

Descriptive analyses address our first research question. Several factors from adolescence can predispose an individual to end up with lower educational attainment. Using bivariate tests for differences in means compared to completely heterosexual respondents, Tables 1 (for women) and 2 (for men) investigate whether these factors differ systematically by sexual identity for women and men. It is important to note that Add Health does not include information about sexual identity during adolescence, so sexual minority-identified adult respondents may or may not have identified the same way as teens. First, people with different sexual orientations may disproportionately come from *socioeconomic backgrounds* that predict higher educational attainment. We find some differences by sexual orientation in parents' education levels, which are correlated with children's educational attainment. Among both men and women, mostly heterosexual respondents have more highly educated parents than completely heterosexual respondents, while bisexual respondents' parents have lower average levels of education. Completely heterosexual and gay/mostly gay women and men do not differ significantly ($p < .05$). Although one might expect these disparities in parental education to translate into differences in parents' expectations that their child will attend college, there are no significant ($p < .05$) differences in this variable for any sexual identity group.

Second, individuals' *neighborhood and school contexts* during adolescence may predict their future educational attainment. For both genders, we find that mostly heterosexual respondents disproportionately come from less religiously conservative and more highly educated neighborhoods and schools than completely heterosexual respondents. Mostly heterosexual women are less likely to come from a rural compared to a suburban/small-town school, and mostly heterosexual men are less likely to come from an urban school. Bisexual women and men come from less highly educated neighborhoods than completely heterosexual respondents, and bisexual men are from less religiously but more politically conservative neighborhoods and are much more likely to come from an urban school. Gay and mostly gay women are significantly less likely than completely heterosexual women to come from urban schools. In sum, for both genders some aspects of the backgrounds of mostly heterosexual respondents suggest that they might end up with higher educational attainment than completely heterosexual respondents, and bisexual respondents' backgrounds suggest lower future educational attainment.

Third, we consider whether *school climate* factors disadvantage sexual minorities in terms of future educational attainment. Findings often support for this idea. All three female sexual minority groups have significantly lower levels of attachment to school than completely heterosexual women, as do mostly heterosexual men compared to completely heterosexual men. Bisexual women and men and gay/mostly gay women perceive their schools to be less safe than their completely heterosexual counterparts. There are no significant differences ($p < .05$) for perceived school prejudice. Experiences of victimization are highly gendered: Mostly heterosexual and bisexual women report more victimization than completely heterosexual women, but mostly heterosexual and gay men report less victimization on

average than completely heterosexual men. This finding appears to be driven by the high levels of victimization or physical fights among completely heterosexual and bisexual men, reported by about half of these groups. Other forms of aggression might follow different patterns.

Fourth, respondents' own *academic achievement and attitudes* in adolescence may also predict their educational attainment. Self-reported grade point averages (GPA) are significantly lower for bisexual women and men compared to completely heterosexual respondents. Interesting, mostly heterosexual and gay men have higher self-reported GPAs than completely heterosexual men. Respondents' college expectations and aspirations follow a fairly similar pattern. Bisexual women have significantly lower, and gay men higher, college aspirations and expectations than their completely heterosexual counterparts.

In sum, we find that although background factors predispose mostly heterosexual people of both genders towards higher educational attainment and bisexual people towards lower, gender plays an important role in understanding sexual minorities' school climates and academic characteristics in adolescence. These factors still point to disadvantages for bisexual men and women, but other female sexual minorities are also disadvantaged in several ways, while gay and (in some cases) mostly heterosexual men experience advantages in victimization, academic achievement, and educational plans for the future. These descriptive findings suggest that educational attainment disparities across sexual identities may be complex and gendered.

4.2. Do sexual minorities have lower educational attainment?

Descriptive results in Tables 1 and 2 document disparities in educational attainment by sexual minority status and gender that are unexpected compared to some previous literature but seem reasonable given the answers to the first research question detailed above. These findings are similar to those in our initial multivariate models, which we describe here. Table 3 presents the results from logistic regression analyses examining differences in high school completion compared to non-completion by sexual orientation identity, stratified by gender. Panel A presents the results for women and shows that in Model 1, bisexual women are 64% less likely to have graduated from high school than completely heterosexual respondents. There are no differences in high school completion for mostly heterosexual women and gay/mostly gay women compared to completely heterosexual women. Table 4 predicts college enrollment, with very similar findings. Bisexual women are 48% less likely than completely heterosexual women to have ever enrolled in college, while there are no significant differences for mostly heterosexual or gay/mostly gay women. In Table 5, college completion is predicted among the subsample of respondents who ever enrolled in college. Panel A, Model 1 shows that all categories of female sexual minorities experience disparities in college completion: Compared to completely heterosexual women, mostly heterosexual women are 23% less likely, bisexual women are 52% less likely, and mostly gay/gay women are 40% less likely ($p < .10$) to graduate from college once enrolled.

The results for men in Panel B of each table show a very different pattern. There is no difference in high school completion between bisexual and completely heterosexual respondents. However, Model 1 shows that gay/mostly gay men are 184% more likely to

have completed a high school degree, and mostly heterosexual men are 122% more likely ($p < .10$), compared to completely heterosexual men. In Table 4, Model 1 shows that mostly heterosexual and gay men are 2 to 3 times as likely as completely heterosexual men to enroll in college. Similar to female respondents, bisexual males are 45% less likely to enroll in college than completely heterosexual men ($p < .10$). In Table 5, there is no difference in college completion (among those who have ever enrolled) between completely heterosexual and either gay/mostly gay or bisexual men. However, mostly heterosexual men are 63% more likely than completely heterosexual men to have graduated from college.

Supplementary pooled analyses combining the genders and interacting gender with sexual minority status support these findings. Figure 1 uses predicted probabilities to illustrate the complicated dynamics among gender, sexual minority status, and educational attainment outcomes. We calculated predicted probabilities for hypothetical cases that have typical values on all variables except sexual orientation and gender. These graphs tell a consistent story. Among women, a completely heterosexual identity is protective, with all groups of female sexual minorities having lower educational attainment for all three educational attainment outcomes. The disparities in predicted probabilities between bisexual and completely heterosexual women range from 10 to 18 percentage points, depending on the outcome. Completely heterosexual women have considerably higher educational attainment than completely heterosexual men, with differences between 4 and 12 percentage points depending on the outcome. But mostly heterosexual and gay/mostly gay men even have higher predicted educational attainment than completely heterosexual women. With the exception of men's college completion, bisexual people of either gender have the lowest predicted educational attainment of all groups.

It is important to differentiate among the three sequential educational attainment outcomes analyzed here. Examining only the sexual orientation disparities that were significant (at $p < .10$) in our main multivariate models, supplemental analyses compared the predicted probabilities from Figure 1 for each sexual minority group compared to the completely heterosexual same-gender hypothetical case and for each outcome. These analyses show that among women, disparities between sexual minority groups and completely heterosexual women increase with each step on the educational attainment ladder. For example, the hypothetical bisexual woman's predicted probability of graduating from high school is 90% of the completely heterosexual woman's, but it decreases steadily to 78% for college enrollment and 65% for college completion once enrolled (and is joined by newly significant disparities in college completion for the other groups of sexual minority women). For men, sexual orientation disparities in the educational attainment process are much less linear. The predicted probabilities of graduating from high school for mostly heterosexual and completely or mostly gay men are 6% and 7% higher, respectively, than for completely heterosexual men. These advantages increase sharply to 31% and 42%, respectively, for college enrollment. But during college these educational advantages taper off slightly, reducing to 27% for mostly heterosexual men and losing significance entirely for mostly or completely gay men. For men but especially for women, then, college seems to be a problematic time for sexual minorities.

4.3. Why are there educational disparities by sexual orientation?

Our final research question seeks to identify explanations for educational attainment disparities by sexual orientation. We first try to explain the lower outcomes of bisexual women across the board. Controlling for parental factors, GPA, school climate and educational attitudes, and social context in Models 2 through 5 slightly reduces disparities in each outcome in at least some models. The combination of these factors in each table's Model 6 is the most powerful for partially explaining disparities, but significant differences between bisexual and completely heterosexual women remain ($p < .01$ for high school completion, $p < .10$ for college enrollment and completion). The disparities in college completion experienced by mostly heterosexual and gay/mostly gay women compared to completely heterosexual women are not explained by the combination of factors in Model 6 ($p < .01$ for mostly heterosexual, $p < .10$ for mostly gay/gay), but Wave I school climate and educational attitudes alone reduce both disparities to nonsignificance in Model 4.

Bisexual men's disadvantage in college enrollment compared to completely heterosexual men is fully explained by the introduction of any of the sets of adolescent factors (parental factors, GPA, school climate and educational attitudes, or social context). Mostly heterosexual men's advantages in college enrollment and completion are only explained to a minor degree by any of these adolescent factors, except that controlling for social context alone reduces the disparity in college completion to nonsignificance. Either GPA or school climate and educational expectations reduces the disparities in high school completion experienced by gay/mostly gay men to nonsignificance. These factors provide the best explanations for disparities experienced by this group in college enrollment as well, but they are only partial ones.

In sum, these analyses show that adolescent school circumstances, attitudes, and neighborhood contexts, as well as parental education and expectations, are sometimes important for understanding the later educational attainment of sexual minorities. The disadvantages in these factors experienced in adolescence by many women and men who would identify as sexual minorities in young adulthood (see Tables 1 and 2) fully or partially explain some educational attainment disparities in young adulthood. Yet it is important to note that several unexplained disparities in educational attainment remain after accounting for all of these adolescent factors. Bisexual women still have significantly lower educational attainment on every outcome than completely heterosexual women ($p < .10$ for college enrollment and completion), and mostly heterosexual and gay/mostly gay women experience disadvantages in college completion ($p < .10$). Mostly heterosexual men have unexplained advantages in college enrollment ($p < .05$) and completion ($p < .10$) compared to completely heterosexual men, and gay/mostly gay men have higher odds of college enrollment. The magnitudes of these remaining disparities are substantial, most at about 50% to 150% differences in odds.

5. Discussion

In the first study of the relationship between sexual orientation/identity and educational attainment outcomes in young adulthood using U.S. data, we find that the implications of sexual orientation for educational attainment are highly gendered. We highlight four key

findings. (1) The societally privileged completely heterosexual identity only predicts higher educational attainment for women, while for men it is a liability. (2) Mostly heterosexual and completely or mostly gay identities can be educationally beneficial for men, but not for women. (3) Educational disparities in college degree completion arise between completely or mostly gay and mostly heterosexual women and their completely heterosexual counterparts, where no such differences existed for high school completion and college enrollment. (4) The most problematic educational outcomes are associated with bisexual identities, especially for women, and these disparities often persist after accounting for the disadvantaged family and neighborhood backgrounds and school context and achievement of bisexual young people.

Thus, in contrast to prior research using data from the general U.S. adult population including older cohorts (Black et al., 2000; Carpenter, 2005) but in greater concordance with Australian and U.S. data from younger cohorts (Carpenter, 2008; Ueno et al., 2013; Walsemann et al., 2014), our cohort-based study following adolescents through early adulthood finds that some groups of self-identified sexual minorities experience substantial disadvantages in educational attainment. These disparities start with experiences, attitudes, and social contexts during primary and secondary school that are likely to compromise the process of future educational attainment (although respondents may or may not have identified as sexual minorities at the time), and they continue at several different critical points in the education system, including high school completion, college enrollment, and college completion.

The research on gender and sexual orientation disparities in educational experiences and achievement is complicated. Some research has not found gender differences in in-school victimization (Russell, Everett, Rosario, & Birkett, 2014) and school attachment (Pearson et al., 2007), but has suggested that same-sex-attracted boys have lower GPAs and less likely to take more advanced courses (Pearson et al., 2007). Our results are somewhat contradictory in that they show that sexual minority women are more likely to face academic challenges, particularly once they have left high school. In contrast, sexual minority men report in several cases equal to or better educational outcomes than heterosexual men.

Gender plays an important part in understanding the relationship between sexual minority status and education. Why does sexual minority status educationally advantage some groups of men, but not women? One possible answer lies in hegemonic constructions of masculinity and their relationship with academic achievement described above. In many social contexts in the United States, boys must not be academic high-achievers or both their masculinity and their heterosexuality will be questioned (Jones & Myhill, 2004; Morris, 2008; Pascoe, 2007). In contrast, high-achieving girls are considered to be gender-conforming, and their heterosexual identity is not called into doubt (Bettie, 2003; Jones & Myhill, 2004). Sexual minority individuals are more likely to have gender-atypical attitudes and behaviors (Blashill & Powlishta, 2009; D'Augelli, Grossman, & Starks, 2005; Lippa, 2002; Skidmore, Linsenmeier, & Bailey, 2006). In this context, our findings could be anticipated: Several sexual orientation groups (regardless of gender) who tend to have more masculine gender performances end up with lower educational attainment. Alternatively, our results are consistent with the idea that heteronormative masculinity depresses educational attainment

among completely heterosexual men, while women's educational attainment more straightforwardly follows patterns expected by minority stress theory (Meyer, 1995, 2003).

Other research has shown that sexual minority youth in high school often fall into two different clusters of academic achievement, engaged and disengaged students, which predict future outcomes such as income and educational achievement (Watson & Russell, 2014). While that study did not examine differences by gender, it is possible that girls are more likely than boys to use disengagement from school to cope with minority stress. In young adulthood, previous research has shown that disparities in mental health and substance use are more prevalent among sexual minority women than men. These differences may also help to explain gender differences in educational achievement.

The results show a unique profile for “mostly heterosexual”-identified men's and women's educational attainment. This finding is in line with other work that has suggested that “mostly heterosexual” people are a unique sexual minority population in both their attraction and behavior (Savin-Williams, Rieger, & Rosenthal, 2013; Savin-Williams & Vrangalova, 2013), but also in other outcomes such as depression, body dissatisfaction, and substance use/misuse (for a review, see Vrangalova & Savin-Williams, 2014). Our results, however, suggest that educational disadvantage for mostly heterosexual participants was concentrated among women (who are overrepresented in this sexual minority group), and a benefit was found in some cases for mostly heterosexual men. More research is needed to understand why these gender differences emerge among mostly heterosexual young people.

In analyzing potential explanations for the relationships between sexual orientation and educational attainment, we made several discoveries in descriptive and multivariate analyses. First, the potential selection of respondents from privileged families and neighborhoods and liberal social contexts into sexual minority status is only supported for mostly heterosexual young people. In contrast, bisexual respondents come from significantly more disadvantaged backgrounds than those who are completely heterosexual. Second, the idea that sexual minorities will be disproportionately motivated to complete more education is supported in some cases but not others. Mostly or completely gay and mostly heterosexual men have higher academic achievement in adolescence than their completely heterosexual counterparts, but bisexual men and women have significantly lower academic achievement. Similarly, gay men have higher educational aspirations and expectations, but bisexual women have lower aspiration and expectations, than their completely heterosexual counterparts. These selection and educational factors often help explain the observed disparities in educational attainment. But bisexual respondents, especially women, still end up with unusually compromised educational outcomes even after controlling for all our potential explanations. This finding is not unique—the particularly problematic outcomes of this sexual minority group are evident across a variety of domains (Eliason, 2001; Hershberger, Pilkington, & D'Augelli, 1997; Mojola & Everett, 2012).

Several limitations of the current study should be addressed in future research. We argue that studies using other data sources should combine adolescent and adult measures of sexual identity (only attraction measures are available in adolescence in Add Health) to consider dynamic processes of sexual identity development concurrently with educational

attainment processes. Moreover, given the multifaceted and fluid nature of sexual orientation development, research that includes multiple indicators of identity and behavior over time may yield important insights. Qualitative research exploring the educational experiences of adolescents and young adults from a variety of sexual orientations could help flesh these processes out. In particular, research investigating college experiences could help understand why some sexual minorities disproportionately struggle to finish a college degree after enrolling in college. We have found that college is a particularly problematic time for sexual minorities of both genders, but with our data, college experiences remain a “black box.” Direct measures of discrimination throughout adolescence and adulthood could help articulate the interactional processes through which social contexts and school experiences translate into compromised or advantaged educational attainment outcomes. The substantial gender differences in educational attainment within different sexual minority statuses are an important focus for future research. It would be useful to analyze national data from more recent cohorts, who experience different climates around sexual identity than the Add Health respondents did. Finally, we argue that future research on attainment processes among sexual minorities can be informed by increased attention to the complex interplay of femininity, masculinity, and sexuality that shapes people's identities and performances of gender and sexual orientation, and thus their life outcomes.

Although more work is needed to understand mechanisms underlying the relationship between sexual identity and educational attainment, these findings have implications for policy and for people seeking to support teens and young adults. First, people who identify as sexual minorities as adults often experienced educational risk factors in adolescence, such as lower attachment to school and a reduced feeling of safety in school. Improving the school experiences of all teens might help reduce future educational disparities. Second, all sexual minority groups are not the same. The educational implications of identifying as mostly heterosexual are quite distinct from those for bisexual-identified people, even though it might be tempting to lump these two identities together. And they both have different implications than those of gay or mostly gay identities. Third, gender is fundamental for understanding educational attainment among sexual minorities. Girls and young women who identify as sexual minorities are particularly at risk of discontinuing their education. Because of women within the same level of education earn less than men (Blau & Kahn, 2007), sexual minority women face a double socioeconomic disadvantage. Fourth, processes underlying sexual minority disparities in educational attainment have their roots in adolescence, but they continue into adulthood. College appears to be an important time when disadvantages experienced by (especially female) sexual minorities are exacerbated, so attention should be paid to supporting sexual minority-identified people both in adolescence and throughout their higher education.

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- Completely heterosexual women have higher educational attainment than sexual minorities.
- The opposite is true for men.
- Bisexual respondents, especially women, have particularly problematic outcomes.
- Adolescent experiences, attitudes, and social contexts explain some disparities.
- Educational interventions should target sexual minority women and bisexual people.

Figure 1. Predicted probabilities of educational attainment outcomes for hypothetical cases, by gender and sexual orientation

Table 1
Row means and percentages for the total female population and by sexual orientation

	Total N=7,612	Hetero N=6,129	Mostly Hetero N=1,167	Bisexual N=175	Gay/Mostly Gay N=141
Did not graduate high school	6.94	6.46	7.52	17.33 **	9.46
Attended college	69.92	70.56	69.63	55.62 ***	30.56
Completed college (overall)	34.52	35.82	21.81 *	18.21 ***	21.59 *
Completed college if attended ^a	49.37	50.77	45.38 *	32.74 **	38.1 +
Race/ethnicity (White)	67.7	66.35	75.18 ***	65.71	64.72
Black	15.85	17.14	8.91 ***	16.57	18.4
Hispanic	11.56	11.77	9.93	13.26	14.57
Asian	3.12	3.29	2.79	1.59 +	0.74 ***
Other	1.8	1.49	3.19 +	2.86	1.57
Age at Wave IV (yrs)	28.69	28.76	28.39 ***	28.2 **	28.6
Parent education (<12 yrs)	20.17	20.51	17.92	21.88	22.54
12 yrs	22.23	22.64	18.37 *	33.08 *	23.66
13-15 yrs	38.2	38.19	40.55	28.4 *	30.56
>16 yrs	17.76	17.02	21.81 *	12.66	21.59
Missing	1.64	1.63	1.34	3.98	1.65
Parent disappointed if respondent didn't attend college					
Very disappointed	12.55	12.23	14.33	12.93	10.19
Somewhat disappointed	38.47	38.19	39.35	37.38	44.82
Not disappointed	37.02	37.46	34.74	35.91	39.38
Missing	11.96	12.13	11.57	13.78	5.6 **
Grade point average (0-1.9)					
2-2.9	3.9	3.65	4.73	4.41	7.27
3-3.49	28.67	29.1	25.87	37.53 +	22.05
> 3.5	23.52	23.15	25.13	22.33	27.22
Missing	29.74	30.54	27.92	17.78 **	25.53
	14.18	12.55	11.57 +	17.95	18.03

	Total N=7,612	Hetero N=6,129	Mostly Hetero N=1,167	Bisexual N=175	Gay/Mostly Gay N=141
School attachment scale	4.6	4.64	4.47 ***	4.28 **	4.36 *
Perceived school lack of safety	2.23	2.21	2.26	2.47 *	2.5 *
Perceived school prejudice	3.18	3.16	3.25 +	3.37 +	3.22
College expectations	4.28	4.3	4.24	3.99 *	4.19
College aspirations	4.52	4.53	4.47	4.32 *	4.44
Victimization experiences	25.57	24.11	31.50 ***	35.88 **	24.46
Neighborhood % religiously conservative					
0-25%	73.07	72.29	76.91 *	76.56	69.51
26-40%	16.44	16.5	16.04	15.66	18.33
41%	10.49	11.21	7.04 **	7.78	12.16
Neighborhood % voted Republican in 1995 Governor election					
0-33%	8.16	8.4	7.28	5.89	7.91
33-66%	65.67	65.7	66.09	66.94	58.94
67%	26.17	25.9	26.62	27.17	33.14
Urban school	25.6	25.43	27.2	27.15	16.64 *
Rural school	15.71	16.67	11.24 **	13.8	14.81
Neighborhood % with college degree					
0-33%	78.56	79.45	73.05 **	86.25 *	76.71
33-66%	18.69	18.09	22.82 **	10.71 **	19.86
67%	2.74	2.45	4.13 *	3.04	3.43

Source: National Longitudinal Study of Adolescent Health (Add Health).

+ Notes: : p<.10

* p<.05

** p<.01

*** p<.001, two-tailed design-based F tests compared to 100% heterosexual.

^a Sample size for this variable is 5,431.

Table 2
Row means and percentages for the total male population and by sexual orientation

	Total N=6,722	Hetero N=6,280	Mostly Hetero N=218	Bisexual N=45	Gay/Mostly Gay N=179
Did not graduate high school	9.91	10.17	5.19 *	18.76	3.94 **
Attended college	59.9	58.82	77.01 ***	44.31 +	82.28 ***
Completed college (overall)	27.43	26.46	44.3 **	20.61	43.86 **
Completed college if attended ^a	45.8	44.98	57.52 *	46.51	53.31
Race/ethnicity (White)	67.95	67.76	77.47 +	75.95	59.71
Black	14.8	15.18	6.44 ***	13.22	11.94
Hispanic	11.77	11.59	11.93	8.08	20.06 *
Asian	3.36	3.37	2.68	1.13 +	4.69
Other	2.11	2.1	1.48	1.61	3.6
Age at Wave IV (yrs)	28.89	28.89	28.76	28.71	28.98
Parent education (<12 yrs)	19.22	19.33	11.57 *	29.54	23.07
12 yrs	21.17	21.41	16.72	25.71	16.86
13-15 yrs	40.39	40.6	40.38	37.49 **	32.59 +
>16 yrs	17.79	17.13	31.33 *	7.26	27.48
Missing	1.43	1.53	0 ***	0 ***	0 ***
Parent disappointed if respondent didn't attend college					
Very disappointed	15.45	15.59	13.87	16.16	11.67
Somewhat disappointed	37.1	37.18	41.25	34.2	28.58 +
Not disappointed	36.66	36.46	37.07	37.96	43.59
Missing	10.79	10.76	7.81	11.69	16.15
Grade point average (0-1.9)	5.8	6.03	1.93 ***	7.43	1.69 ***
2-2.9	32.27	32.24	32.08	37.58	32.29
3-3.49	21.58	21.72	18.91	7.8 ***	23.52
> 3.5	21.73	21.15	31.96 *	15.67	31.68 *
Missing	18.63	18.86	15.13	31.51	10.83 ***

	Total N=6,722	Hetero N=6,280	Mostly Hetero N=218	Bisexual N=45	Gay/Mostly Gay N=179
School attachment scale	4.66	4.66	4.44 *	4.45	4.69
Perceived school lack of safety	2.19	2.18	2.25	2.87 *	2.24
Perceived school prejudice	3.15	3.14	3.31	3.08	3.31
College expectations	4.03	4.01	4.18	3.7	4.41 ***
College aspirations	4.35	4.34	4.36	4.2	4.64 ***
Victimization experiences	48.85	49.94	40.93 *	47.92	16.7 ***
Neighborhood % religiously conservative					
0-25%	70.78	70.12	82.71 **	83.42 +	76.83
26-40%	18.92	19.23	14.07	6.35 **	16.87
41%	10.3	10.66	3.22 **	10.23	6.29 +
Neighborhood % voted Republican in 1995 Governor election					
0-33%	7.9	7.98	7.59	1.33 *	7.16
33-66%	66.58	66.88	61.7	53.72	65
67%	25.52	25.15	30.71	44.95 *	27.84
Urban school	26	26.03	17.38 *	51.96 *	30.59
Rural school	15.52	15.44	14.49	26.96	16.76
Neighborhood % with college degree					
0-33%	77.13	77.39	64.19 *	86.14	83.02
33-66%	19.92	19.91	28.85 *	13.86	9.12 ***
67%	2.95	2.7	6.96	0	7.85

Source: National Longitudinal Study of Adolescent Health (Add Health).

+ Notes: p<.10

* p<.05

** p<.01

p<.001, two-tailed design-based F tests compared to 100% heterosexual.

^a Sample size for this variable is 4,190.

Table 3
Odds ratios for sexual orientation differences in high school completion

	Panel A: Females						Panel B: Males					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sexual orientation (100% heterosexual)												
Mostly heterosexual	0.85	0.77	0.95	0.96	0.80	0.93	2.22 †	1.72	1.86	2.05 +	2.05 +	1.56
Bisexual	0.36 ***	0.37 ***	0.44 **	0.45 **	0.37 ***	0.46 **	0.48	0.59	0.63	0.52	0.55	0.74
Mostly gay/gay	0.70	0.66	0.77	0.73	0.71	0.73	2.84 *	2.71 *	2.23	1.89	2.98 *	1.75
Age	1.14 **	1.19 **	1.21 ***	1.22 ***	1.16 **	1.28 ***	1.10 *	1.15 ***	1.13 **	1.15 **	1.10 *	1.19 ***
Race/ethnicity												
Black	0.60 **	0.73 †	0.84	0.72 †	0.59 **	0.85	0.54 **	0.58 **	0.69 +	0.55 **	0.56 **	0.67 *
Hispanic	0.55 ***	0.93	0.72 †	0.71 †	0.49 ***	0.87	0.54 **	0.88	0.66 *	0.62 **	0.59 *	0.99
Asian	1.80	1.77	1.39	1.34	1.48	1.05	5.36 ***	4.67 **	3.85 **	4.18 **	5.29 ***	3.54 **
Other race	0.51	0.59	0.51	0.34 *	0.37 +	0.31	0.80	0.89	1.00	0.73	0.76	0.85
Parent education(16 years)												
<12 years		0.03 ***				0.08 ***		0.08 ***				0.16 ***
12 years		0.07 ***				0.15 ***		0.17 ***				0.30 ***
13 to 15 years		0.19 ***				0.31 **		0.36 ***				0.53 *
Missing		0.07 ***				0.24 *		0.07 ***				0.13 ***
Parent expectations that respondent will attend college (Not disappointed)												
Somewhat disappointed		2.15 ***				1.59 *		1.80 ***				1.38 *
Very disappointed		2.80 ***				1.83 **		1.95 ***				1.20
Missing		2.49 ***				2.09 **		1.80 **				1.26
Grade point average (> 3.5)												
0 to 1.9			0.02 ***			0.05 ***			0.05 ***			0.09 ***
2 to 2.9			0.04 ***			0.09 ***			0.13 ***			0.23 ***
3 to 3.49			0.11 ***			0.18 ***			0.41 *			0.50 †
Missing			0.02			0.05 ***			0.07 ***			0.12 ***

	Panel A: Females						Panel B: Males					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
School attachment			1.24 **		1.15 †				1.31 **			1.19 †
Perceived lack of school safety			0.91		0.94				1.09			1.10
Perceived school prejudice			1.04		1.00				1.05			1.05
College expectations			1.60 ***		1.21 *				1.58 ***			1.30 ***
College aspirations			1.17 †		1.15				1.06			1.02
Victimization experiences			0.59 **		0.67 *				0.56 ***			0.63 ***
Percent religiously conservative (25%)												
26-40%					0.76						0.96	0.80
>=41%					1.07						1.47	1.33
Percent voted Republican in 1995 Governor election (<33%)												
33-66%					1.49						0.99	0.92
>=67%					1.50 †						1.15	1.12
Percent that have college degrees (<33%)												
33-66%					2.34 ***						2.00 ***	1.18
>=67%					2.92 *						3.42 *	1.62
Rural school					0.82						0.89	0.98
Urban school					0.97						0.88	0.94

Source: National Longitudinal Study of Adolescent Health

† <10

* p .05

*** p .01

*** p .001

Table 4
Odds ratios for sexual orientation differences in college enrollment

	Panel A: F emales						Panel B: Males					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sexual orientation (100% heterosexual)												
Mostly heterosexual	0.91	0.84 †	0.99	1.00	0.85	0.91	2.27 ***	1.90 *	2.13 **	2.43 ***	2.14 ***	1.97 *
Bisexual	0.52 ***	0.58 **	0.63 *	0.63 *	0.53 ***	0.71 †	0.55 †	0.64	0.68	0.65	0.58	0.77
Mostly gay/gay	0.71	0.65	0.73	0.75	0.69	0.67	3.37 ***	3.40 ***	2.96 ***	2.49 **	3.62 ***	2.50 **
Age	0.99	1.03	1.03	1.01	1.00	1.06 †	0.99	1.02	1.01	1.03	0.99	1.06 †
Race/ethnicity												
Black	0.65 **	0.76 *	0.87	0.75 +	0.70 **	0.99	0.60 **	0.59	0.77	0.60 **	0.64 **	0.75 †
Hispanic	0.52 ***	0.79 †	0.65 **	0.68 ***	0.50 ***	0.91	0.64 **	0.93	0.76 †	0.74 *	0.69 *	1.08
Asian	1.27	1.13	1.04	1.04	1.11	0.80	2.19 **	1.65	1.78 *	1.80 *	2.30 **	1.42
Other race	0.84	0.92	0.88	0.58	0.69	0.63	0.84	0.87	1.00	0.79	0.91	1.00
Parent education(16 years)												
<12 years		0.07 ***				0.15 ***		0.10 ***				0.19 ***
12 years		0.12 ***				0.21 ***		0.15 ***				0.24 ***
13 to 15 years		0.25 ***				0.37 ***		0.40 ***				0.55 ***
Missing		0.08 ***				0.16 ***		0.12 ***				0.26 ***
Parent expectations that respondent will attend college (Not disappointed)												
Somewhat disappointed		2.03 ***				1.41 **		2.38 ***				1.57 ***
Very disappointed		2.50 ***				1.52 **		3.19 ***				1.68 ***
Missing		1.97 ***				1.39 *		3.20 ***				1.90 ***
Grade point average (> 3.5)												
0 to 1.9			0.09 ***			0.20 ***			0.11 ***			0.21 ***
2 to 2.9			0.16 ***			0.27 ***			0.21 ***			0.34 ***
3 to 3.49			0.40 ***			0.52 ***			0.52 ***			0.57 ***
Missing			0.11 ***			0.20 ***			0.15 ***			0.25 ***

	Panel A: Females						Panel B: Males					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
School attachment				1.02		0.93				1.07		1.02
Perceived lack of school safety				0.88 *		0.90 †				1.00		1.01
Perceived school prejudice				1.08 *		1.06				1.04		1.04
College expectations				1.83 ***		1.40 ***				1.77 ***		1.44 ***
College aspirations				1.20 ***		1.20 ***				1.31 ***		1.23 ***
Victimization experiences				0.69 ***		0.80 *				0.69		0.77 ***
Percent religiously conservative (25%)												
26-40%					0.85	0.77 *					1.16	1.03
>=41%					0.94	0.88					1.09	0.97
Percent voted Republican in 1995 Governor election (<33%)												
33-66%					0.95	0.87					0.64	0.65
>=67%					1.09	0.98					0.84	0.85
Percent that have college degrees (<33%)												
33-66%					2.45 ***	1.55 ***					2.39 ***	1.47 **
>=67%					2.41 *	1.09					2.39 *	1.42
Rural school					0.74 *	0.74 *					0.79	0.89
Urban school					0.93	0.96					0.96	1.06

Source: National Longitudinal Study of Adolescent Health

† <10

* p .05

** p .01

*** p .001

Table 5
Odds ratios for sexual orientation differences in college completion if enrolled

	Panel A: Females						Panel B: Males					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sexual orientation (100% heterosexual)												
Mostly heterosexual	0.77 *	0.69 ***	0.83 †	0.85	0.70 ***	0.72 **	1.63 *	1.59 *	1.70 *	1.87 *	1.42	1.54 †
Bisexual	0.48 **	0.47 *	0.52 *	0.56 *	0.49 **	0.55 †	1.12	1.61	1.53	1.49	1.33	2.09
Mostly gay/gay	0.60 †	0.52 †	0.58 †	0.63	0.58 †	0.55 †	1.50	1.43	1.36	1.27	1.53	1.21
Age	1.00	1.03	1.05	0.99	1.00	1.06 †	1.01	1.03	1.07 †	0.99	1.01	1.06
Race/ethnicity												
Black	0.66 *	0.72 +	0.90	0.81	0.71 †	1.16	0.62 **	0.60 ***	0.88	0.71 *	0.70 *	1.01
Hispanic	0.60 **	0.87	0.75	0.77	0.61 **	1.07	0.48 ***	0.60 **	0.62 **	0.61 **	0.55 ***	0.87
Asian	1.49	1.30	1.26	1.48	1.41	1.11	2.10 **	1.80 *	1.07	2.21 **	2.12 **	1.48
Other race	0.59 +	0.61	0.63	0.59	0.68	0.74	0.54 *	0.51 *	0.61	0.58	0.57 *	0.56
Parent education(16 years)												
<12 years		0.13 ***				0.22 ***		0.18 ***				0.28 ***
12 years		0.21 ***				0.29 ***		0.26 ***				0.34 ***
13 to 15 years		0.35 ***				0.45 ***		0.36 ***				0.40 ***
Missing		0.07 ***				0.10 ***		0.11 ***				0.13 **
Parent expectations that respondent will attend college (Not disappointed)												
Somewhat disappointed		1.65 ***				1.21		1.92 ***				1.30
Very disappointed		2.23 ***				1.42 *		2.61 ***				1.53 *
Missing		1.72 ***				1.22		2.67 ***				1.77 *
Grade point average (> 3.5)												
0 to 1.9			0.06 ***			0.10 ***			0.04 ***			0.05 ***
2 to 2.9			0.20 ***			0.28 ***			0.22 ***			0.28 ***
3 to 3.49			0.45 ***			0.53 ***			0.51 ***			0.53 ***
Missing			0.13 ***			0.18 ***			0.14 ***			0.19 ***

	Panel A: Females						Panel B: Males					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
School attachment			1.11 †			1.06			1.19 *			1.12 †
Perceived lack of school safety			0.97			0.99			0.91			0.95
Perceived school prejudice			1.03			1.03			1.06			1.05
College expectations			2.06 ***			1.47 ***			1.81 ***			1.38 ***
College aspirations			1.08			1.05			1.25 **			1.17 *
Victimization experiences			0.55 ***			0.67 ***			0.68 ***			0.76 **
Percent religiously conservative (25%)												
26-40%					0.74 †	0.64 **					0.78	0.63 **
>=41%					1.02	0.91					0.81	0.62 **
Percent voted Republican in 1995 Governor election (<33%)												
33-66%					0.74	0.73					0.71 †	0.81
>=67%					0.85	0.80 †					0.78 †	0.83
Percent that have college degrees (<33%)												
33-66%					2.11 ***	1.54 ***					1.80 ***	1.38 *
>=67%					3.29 ***	1.91 *					2.14 **	1.42
Rural school					0.83	0.80					0.84	0.85
Urban school					1.09	1.15					0.75 †	0.75 †

Source: National Longitudinal Study of Adolescent Health

† <10

* p .05

** p .01

*** p .001