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Sexual Orientation and Outcomes in College

CHRISTOPHER S. CARPENTER*
kittc@uci.edu

Abstract

It has been well documented that sexual minority individuals are significantly more likely to be college educated than heterosexual individuals (Black et al. 2000 and others). Yet there is very little scholarship on the experiences of sexual minorities *in college*. We discuss several ways that sexual orientation could matter for college outcomes, and we provide the first empirical evidence on this question by using confidential data on over 40,000 students from the 1997, 1999, and 2001 waves of the Harvard College Alcohol Study. We identify sexual minorities by using responses to questions about the sex of the respondent's lifetime sex partners. After conditioning on observable demographic characteristics and institution fixed effects, we find that (compared to their heterosexual peers): (1) gay males have higher college grade point averages and perceive their academic work as more important; (2) gay and bisexual males are more likely to report the presence of a faculty member or administrator with whom they could discuss a problem; and (3) gay and bisexual males place more importance on participating in student organizations, volunteer activities, the arts, and politics. Among females, we find that: (1) bisexual females are less satisfied with the education they are receiving, spend less time studying, and perceive their academic work as less important; and (2) lesbian and bisexual females place more importance on participation in the arts and politics. These patterns suggest important and complex relationships between sexual orientation and college outcomes.

JEL Codes: J1, J2, J7.
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*Assistant Professor of Economics/Public Policy, University of California, Irvine, The Paul Merage School of Business. kittc@uci.edu, 443 SB UC Irvine, Irvine, CA 92697-3125. I am grateful to the Paul Merage School of Business for generous financial support. I thank Greg Lewis, the editor, and two anonymous referees for very useful comments, and I thank Gary Gates for providing a Census 2000 calculation. I am grateful to Toben Nelson for assistance with the confidential versions of the Harvard CAS data; these data are protected by a confidentiality agreement. Interested readers can contact the author for information on how to obtain access. All errors and omissions are my own.

I. Introduction

Gay men, lesbians, and bisexual individuals have become the subject of an increasing amount of public attention in recent years. Policy debates concerning employment protection, same-sex marriage, and adoption rights have been thrust forward on the international political agenda. Concurrently, academic social scientists have begun to focus increasing attention on the relationship between sexual orientation and socioeconomic status. Economists in particular have fashioned a substantial literature showing that sexual minority males (variously defined) earn lower incomes than otherwise similar heterosexual men (e.g. Badgett 1995, Carpenter 2007), even while lesbian women may have fared better than their straight counterparts (Black et al. 2003, Blandford 2003, and others). Notably, every credible social science data source with information on sexual orientation has also revealed that sexual minorities are more likely to be college educated than heterosexual individuals (Black et al. 2000, Carpenter 2005, and others). For example, data from the most recent Decennial Census (in 2000) shows that among 25-50 year olds, men and women in same-sex unmarried partnerships are 5 to 6 percentage points more likely than heterosexually married individuals of either sex to have attended college.[1]

Yet we know very little about the relationship between sexual orientation and outcomes *in college*. Do sexual minorities make different choices with respect to schooling? Do sexual minority college students allocate their time between academics, work, and extracurricular activities differently than heterosexual students? Are sexual minorities endowed with a different level or type of skills than straight people? Answers

to these questions may be important for understanding why sexual minorities have higher rates of college attendance and completion.

In this paper we provide important new evidence on sexual orientation-based differences in outcomes for college students. Specifically, we make use of confidential versions of the Harvard College Alcohol Study (CAS) from the years 1997, 1999, and 2001. These data are unique in that they are the only large, nationally representative source of data on college students to directly ask a question about same-sex sexual experience. Over 1,800 young adults in our sample report having same-sex sexual relations in their lifetime; we use this information to identify sexual minority males and females. In addition to the question about sexual experience, respondents are asked about academic outcomes, employment outcomes while in school, social capital, time use patterns, and attitudes about the importance of participating in various extracurricular activities. We use these responses to evaluate sexual-orientation based differences in college outcomes using straightforward empirical methods, and we discuss the implications of these patterns for recent research on sexual orientation-based differences in socioeconomic status.

To preview, we find that compared to their heterosexual peers: (1) gay males have higher college grade point averages and perceive their academic work as more important; (2) gay and bisexual males are more likely to report the presence of a faculty member or administrator with whom they could discuss a problem; and (3) gay and bisexual males place more importance on participating in student organizations, volunteer activities, the arts, and politics. Our general pattern of "positive" findings for gay men may provide

[1] Figures are based on the combined 1% and 5% PUMS for individuals in same-sex couples and on the 1% PUMS for married individuals. Actual figures are: 35.6% vs. 30.5% for males, 35.7% vs. 29.3% for

one explanation for their higher rates of college education. Among females, we find that: (1) bisexual females are less satisfied with the education they are receiving, spend less time studying, and perceive their academic work as less important; and (2) lesbian and bisexual females place more importance on participation in the arts and politics.

We refrain from a literature review in this paper, in large part because we are aware of almost no studies that specifically address sexual orientation-based differences in college outcomes. An important exception, however, is Plug and Berkhout (2003) who use representative data on a cohort of young college graduates in the Netherlands. While not the focus of their study, Plug and Berkhout do report differences in the type of educational track taken by students of different sexual orientations. Finally, there are a number of recent studies that examine health outcomes by sexual orientation for college-age youths, including Eisenberg and Wechsler (2003a, 2003b) and McCabe et al. (2003), all of whom focus on substance use.

II. Conceptual Framework

Before we present the empirical evidence on the relationship between sexual orientation and college outcomes, it is useful to ask the obvious question: why might there be independent associations between sexual orientation and college outcomes? To provide a conceptual framework for thinking about this question, we draw on similar discussions from the literature on sexual orientation and earnings. This literature provides several possible reasons why sexual minority college students could experience different college outcomes: they might make systematically different choices, they could be treated differently by the external environment, and/or they may be endowed with different abilities than heterosexual individuals.

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females (personal communication with Gary Gates 9/15/2005).

There are several reasons why sexual minorities might make different choices while in college. Previous research has suggested that the combination of different gender-specific endowments combined with different partnering expectations of sexual minorities may create unique incentives for gay men and lesbians regarding human capital accumulation (Black et al. 2003).[2] Similarly, expectations about future family arrangements, including the differential likelihood of raising and financially supporting children, may also affect choices about variables such as choice of college major or the amount of time to devote to studying versus other activities. Sexual minority young adults may also simply have different tastes relative to heterosexual individuals given the same menu of extracurricular activities. That is, stereotypes about gay men preferring the theater and lesbians preferring athletics may have basis in fact, and our data on time use and participation in various college activities provide some unique evidence on these possibilities. These activity choices may also be related to future career prospects, as research in economics has consistently shown that gay men and lesbians have different industry and occupation distributions than heterosexual individuals (see, for example, Carpenter 2006, Black et al. 2003, and others).

Different observed educational choices may also arise due to systematic differences in ability that may be associated with sexual orientation. Although there is no evidence on sexual-orientation based differences in, say, childhood test scores or aptitude, there are associated literatures on similar differences associated with other

[2] The intuition of this stylized Becker type model is that gay men may be expected to underinvest in market based skills and human capital accumulation if they expect that their future partner will be relatively well endowed in market based skills (in order to exploit comparative advantage and household specialization). The opposite will be true for lesbians relative to heterosexual women: they may be expected to overinvest in market based skills. The overall point is that these incentives may produce sexual orientation gradients in college outcomes related to human capital acquisition, such as GPA or study effort.

demographic characteristics such as race and sex. As such, it is not implausible that ability endowments could be independently related to sexual orientation. If so, one might observe differences in outcomes such as grade point average.

Of course, sexual minorities may face different treatment while in college, which could also produce an observed association between college outcomes and sexual orientation. One obvious example would be direct discrimination experienced by sexual minority college students. It could be, for example, that employers have discriminatory hiring preferences due to distaste for hiring sexual minority workers. If so, sexual minority youths may have different in-school employment outcomes and/or may earn lower wages from work while in college than similarly situated heterosexual youths. Related forces might also be present on college campuses as expressed through treatment of administrators, professors (e.g. through the determination of grades), and other students on campus (e.g. through inclusion of sexual minority youths in social networking activities or club membership).

There are other examples of different treatment that could also produce sexual-orientation based differences in outcomes observed in our data. Sexual minority youths might face difficulty in their relationships with their family and parents because of their gay or lesbian identity; if this hardship translated into less financial support for college, it is plausible that sexual minority youths would be more likely to have to work while in school to pay for college. Characteristics of the broader environment could also affect the treatment of sexual minority youth, including: college resource centers for gay, lesbian, and bisexual youths and/or state and local anti-discrimination policies or hate crime laws covering sexual orientation. If these institutions and policies have meaningful

effects, one might observe differences in work outcomes and wages, as well as possible effects on social outcomes, for example through reductions in harassment.

In summary, there are several possible channels through which sexual orientation and outcomes in college could be systematically related. Importantly, observed differentials are almost certainly driven by a combination of different choices and different treatment, as well as dynamic interactions and feedback effects. Since individuals make choices subject to various constraints – including actual or perceived discrimination – it could be that what we observe as different choices may in fact reflect the cumulative effects of differential treatment.[3] Put differently, these considerations imply that the 'different choices' explanations described above are largely indistinguishable (in an empirical sense) from the 'different treatment' explanations.

III. Data and Empirical Approach

The primary outcome data for this paper come from confidential versions of the 1997, 1999, and 2001 waves of the Harvard College Alcohol Study (CAS). The CAS uses a paper and pencil questionnaire that is administered to approximately 15,000 students in each year at over 100 colleges and universities across the United States.[4] When weighted to adjust for student characteristics at each institution, these data provide a nationally representative picture of students and undergraduate institutions in the United States.

The CAS is – to our knowledge – the only large survey of college students to ask about same-sex sexual behavior. Specifically, respondents are asked: "If you have ever been sexually active, has it been with:… ? (Choose one answer.)." Possible response

[3] A related problem is that we do not observe direct measures of respondent preferences or ability endowments in the data. In this sense, all of our statistical evidence is reduced form and reflects the net result of the possible mechanisms described above.

options include: "I have not been sexually active", "Opposite sex partner(s)", "Same sex partner(s)", and "Both opposite and same sex partners". Sample sizes of students who report any same-sex sexual behavior – approximately 200 men and 500 women in each survey year – are larger than previous research that has used similar sexual behavior data from the General Social Survey. We create separate indicators for each response option – including no lifetime sexual activity – and estimate models that use heterosexually behaving students as the excluded reference category. In some models we combine behaviorally gay/lesbian students with behaviorally bisexual students. The data also include basic demographic characteristics such as age, race, and year in school that we use in regression-adjusted models below. Throughout the empirical work, we assume that sexual orientation is an exogenously given characteristic, similar to race or sex.[5]

An immediate potential question with respect to our data is the degree to which exclusively same-sex sexual behavior over one's lifetime is correlated with a gay or lesbian orientation, which is arguably the more relevant concept of interest. To provide evidence on this important question, we used independent data from the 2002 National Survey of Family Growth (NSFG), a large representative household survey that asked respondents about both their lifetime sexual behavior and their current sexual orientation. These data indicated that our lifetime sexual behavior measure is unlikely to be problematic for the male sample. Specifically, although the vast majority of self-described gay men had *not* engaged in exclusively same-sex sexual behavior over their

[4] We use the sample recommended by the Harvard CAS data administrators composed of the 119 institutions sampled in every wave that achieved a minimum threshold response rate.

[5] This may be problematic in our context since we use information on sexual behavior as a proxy for the respondent's sexual orientation. If expression of one's sexual orientation through one's sexual behavior is correlated with the characteristics of the college or university attended, it may not be the case that our measure of a minority sexual orientation is truly exogenous in this context.

lifetime (i.e. most gay individuals had experienced different-sex sex), the converse was not true. That is, the overwhelming majority (86%) of adult men reporting exclusively same-sex sexual behavior over their lifetime (N=51) did, in fact, concurrently report a gay sexual orientation. Because we are mainly interested in the concept of a gay sexual orientation, this suggests that any slippage from these definitions should not be substantively worrisome for males. Put differently, these phenomena indicate that our "gay" male sample is unlikely to be diluted by individuals who would not describe themselves as such.[6] These considerations imply that the most useful comparisons are those between exclusively same-sex behaving males and exclusively different-sex behaving males in the CAS data.

Among females, however, the NSFG indicated substantially more slippage across these definitions. We found, for example, that only 44% of adult women reporting exclusively same-sex sexual behavior in their lifetime (N=22) concurrently reported a lesbian sexual orientation. This is lower than the associated rate for males and suggests caution in interpreting our results for females. Importantly, when we add individuals who describe themselves as bisexual to this figure, the NSFG indicates that a substantial majority of these same-sex behaving women (59%) reported either a lesbian or bisexual orientation. This suggests that one may want to interpret our results for same-sex behaving women as better reflecting sexual minority women in general.[7]

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[6] That is, if instead we were interested mainly in exclusively same-sex sexual behavior over one's lifetime, a self-described "gay" identity would be much more problematic in this sense.

[7] There are other reasons to think that a lifetime same-sex sexual behavior measure should not prove too problematic. First, the respondents in our sample are, by construction, fairly young. As such, lifetime same-sex sexual behavior is likely highly correlated with recent same-sex sexual behavior for college students. Second, the largest socioeconomic differentials in the published literature have been found for measures of same-sex sexual behavior, not sexual orientation or attraction (Badgett 1995, Black et al. 2003, and others). Finally, other researchers have used confidential area-identified versions of the CAS and have shown that outcomes for same-sex sexual behaving college students are significantly related to the presence

With respect to outcomes, we consider a variety of variables that reflect different aspects of the college experience measured in the CAS. First, we consider a set of academic outcomes. Students are asked to state their grade point average (GPA) in the past year, and response categories are represented by letter grades. We transform these letter grades into grade point equivalents where A equals 4.0, A- equals 3.7, etc.[8] Next, we use information on the respondent's reported number of hours spent studying outside of class. Specifically, the CAS asks students "In the past 30 days, how many hours per day on average did you spend in each of the following activities?", where "studying outside of class" is one of the categories. Response options include zero hours, one hour, two hours, three hours, four hours, and five or more hours. For simplicity and ease of interpretation we estimate OLS models that ignore censoring, though tobit models produced very similar estimates and are available upon request.

We also consider a variable indicating the respondent's overall satisfaction with the education they are receiving. Response options included "very dissatisfied", "somewhat dissatisfied", "somewhat satisfied", and "very satisfied". We estimate ordered logit models of the odds that the individual's response falls into the next most desirable category (e.g. from "somewhat satisfied" to "very satisfied"), and we present adjusted odds ratios. Finally, we consider a dependent variable indicating how the respondent perceives the importance of participating in academic work while in college.

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of a GLBT resource center on campus; since these resource centers are partly a function of student demand, this is indirect evidence that same-sex sexual behavior is credibly capturing sexual orientation (Eisenberg and Wechsler 2003).

[8] A limitation of the CAS is that we do not observe information on the student's choice of college major or the academic rigor of the coursework. If there are systematic differences in the difficulty of different majors chosen by students of different sexual orientations (even within the same institution), this may bias comparisons of academic performance. It should be noted that all of our data come from the student's own self-report. We do not observe administrative data which would help us confirm, for example, the student's

Again, response options are ordinal in nature and range from "not important at all" to "very important".

Next, we consider a set of economic outcomes pertaining to working while in college. First we examine responses to the question about the reported average number of hours the respondent spent working for wages while in school. Response options are identical to those for studying, and we again estimate OLS models for exposition purposes. Students are also asked how much money they receive in a week on average from two different sources: money from working and money from "other sources". Response options are presented in ranges, and we estimate interval regression models that take into account this feature of the data.

We next use a set of questions about what we term the student's "social capital" or "connectedness". First, we use information on whether the student reports that there is a faculty member or administrator that she would approach if she had a problem. We model this dichotomous outcome using logit. In addition to student ties to the faculty and administration, we are also interested in social relationships with peers. Specifically, the Harvard CAS includes a question about the number of "close friends" the student reports she has; response options include zero, one, two, three, four, and five or more close friends. As with the time use variables, we present OLS estimates, though again tobit results were very similar. Students are also asked about the amount of time in an average week they spend socializing; response options and estimation approach are the same as for the previous "time working for wages" and "time studying outside of class" outcomes, and we estimate these models by OLS. Next, we use responses to a question

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grade point average in the survey year. There is no reason to believe, however, that sexual orientation is systematically related to errors in reporting outcomes.

about how the student perceives the importance of participating in parties while at school. Response options range from "not at all important" to "very important" (four categories), and we again use ordered logit methods.

We also consider a variety of other time use outcomes. Specifically, we use information on the number of hours per day in the average week the student reports watching tv/videos, participating in student organizations, and volunteering. Response options again range from zero hours to five or more hours per day, and we present OLS estimates. Finally, we use information contained in questions about how important it is for the student to participate in various extracurricular activities at college, including the arts, politics, and athletics. Response options range from "not important at all" to "very important" (four categories), and we use ordered logit for estimation.

Our empirical framework is straightforward and involves comparing adjusted differences in outcomes by sexual orientation separately for males and females. These models isolate the independent association between a minority sexual orientation and the college outcomes discussed above. A key feature of our confidential data is that we observe scrambled institution identifiers for all observations in the data. As such, our models below allow for unrestricted institution fixed effects (i.e. a dummy variable is included for each college or university in the dataset, less one). Inclusion of these institution dummies alleviates the concern that college characteristics may be associated with both more sexual minority representation and systematically different outcomes (e.g. urban colleges may attract more sexual minority students and may be independently related to different work outcomes and time use choices). Effectively, this means we are comparing sexual minority students with heterosexual students *at the same institutions*.

This correction is likely to be especially important for nonstandardized outcomes such as grade point average, which may vary systematically with college competitiveness.[9]

We implement the empirical models by estimating standard multivariate regression models of the form:

(1) $Y = \alpha + \beta_1 X + \beta_2 Z + \beta_3(\text{Behaviorally Gay/Lesbian}) + \beta_4(\text{Behaviorally Bisexual}) + \varepsilon$

where Y refers to the various outcomes referred to above. X is a vector of demographic characteristics, including: age dummies (for each single year of age between 18 and 24 and a dummy indicating age greater than 25), race dummies (white, black, Asian, and other race), year-in-school dummies (first year, second year, third year, fourth year, fifth year and over, and a graduate student dummy), and survey year dummies. We also include in the vector X two dummies for parental education: one indicating that the respondent's mother attended college and another indicating that the respondent's father attended college. Z is a vector of institution dummies (i.e. college fixed effects).

Behaviorally Gay/Lesbian is a dummy variable indicating the respondent reported exclusively same-sex sex partners over her lifetime, while Behaviorally Bisexual is a dummy variable indicating the respondent reported both same-sex and different-sex sex partners over her lifetime. We also explore robustness to combining these individuals into a single group consisting of individuals who reported any same-sex sexual experience; this dummy variable is called Behaviorally GLB. Finally, in all models we also include a control for individuals who have not had sexual activity (not reported but available upon request). β_3 and β_4 are the coefficients of interest and reflect the

[9] Again, this would only bias our sexual orientation associations to the extent that, say, college competitiveness were independently related to sexual orientation. Although we have no strong evidence on this point, inclusion of the institution dummies accounts for such possibilities.

independent association between a minority sexual orientation (as proxied by same-sex sexual behavior) and outcomes, net of other demographic and school characteristics.[10]

IV. Results

We begin by presenting raw sample sizes of sexual minority students for each survey wave of the CAS data in Table 1, as well as the fraction Behaviorally GLB (i.e. the fraction reporting any same-sex sexual behavior) by sex. Over the three waves from 1997 to 2001, about 3.8 percent of males and 4.7 percent of females report having had any lifetime same-sex sexual partners; these fractions are comparable to previously used data sources with information on sexual behavior, such as the General Social Survey. Notably, the fraction exhibiting same-sex sexual experience increases steadily across the waves, perhaps as a result of changing societal norms associated with sexual orientation.[11] The raw sample sizes in Table 1 show that we observe well over 1800 sexual minority young adults in these data pooled across the three waves; these samples are quite large relative to those in the existing literature.

Table 2 presents the distribution of relevant sample characteristics for males and females by sexual behavior (no lifetime sexual activity, opposite-sex partners only, both same-sex and different-sex partners, and only same-sex partners). A number of patterns merit mention. First, same-sex behaving males and females are older on average compared to heterosexual students or students who have not ever had sex. This is partially by construction, since our measure of sexual activity refers to lifetime behavior. Interestingly, same-sex behaving students are less likely to be white and slightly more

[10] To allow for the possibility that individuals attending the same school share correlated unobservables, we estimate robust standard errors adjusted for clustering at the institution level. All models use survey sampling weights, and all analyses are performed using the statistical package STATA 8.0.

likely to be black or Hispanic than heterosexually-behaving students in our sample. The other notable pattern in Table 2 is that rates of parental college education are much lower for gay and lesbian students than for heterosexual students, particularly among males. Bisexual youths have slightly higher rates of parental college attendance. Below, our empirical models directly control for parental college education; to our knowledge, this represents the literature's first attempt to control for family background in estimating the independent association between sexual orientation and socioeconomic outcomes.[12]

In Table 3 we report estimates of the independent relationship between a minority sexual orientation and several academic outcomes. The results in Columns 1 and 2 indicate that sexual minority males and females have largely similar grade point averages compared to their heterosexual counterparts after controlling for observable demographics and institution fixed effects. Column 1 does indicate, however, that gay men have significantly higher GPAs. In Columns 3 and 4 we present OLS estimates of the estimated number of hours per day the respondent reports studying outside of class. Results indicate no significant differences for sexual minority males but do indicate that sexual minority females spend significantly *less* time (.11 hours per day) studying out of class – a finding driven by bisexual female students.

In Columns 5 and 6 we present results for education satisfaction. Since the estimation method here is ordered logit and we present odds ratios, numbers greater than one represent more satisfaction. We find that bisexual female students are much less satisfied with their education than heterosexual students, while the same is true for

[11] Recall that our sample includes the same 119 institutions across all three waves. As such, the increase in same-sex behaving students is not a function of changing composition of institutions sampled.
[12] Black et al. (2003) report father's education for a sample of same-sex behaving males in the GSS, but they do not otherwise incorporate parental education.

bisexual male students. In Columns 7 and 8 we present adjusted odds ratios from ordered logit models of the perceived importance of academic work; again, coefficients larger than one represent greater perceived importance. We find that gay men – but not bisexual men – perceive their academic work to be more important than do heterosexual male students; in contrast, however, we find that bisexual females perceive their academic work to be significantly less important than do heterosexual females.

In Table 4 we report differences by sexual orientation from regression models for various economic outcomes. Columns 1 and 2 present OLS estimates from models explaining the number of hours per day on average the respondent spends working for wages. Among males, we find that gay men spend more hours per day working for wages than their heterosexual counterparts, and this result is significant at the ten percent level. We find no significant differences for sexual minority females. Columns 3 through 6 of Table 4 present interval regression results for models of money received each week from two sources: work (Columns 3 and 4) and "other sources" (Columns 5 and 6). Because we are interested in overall relative economic well-being while in college, these models include all respondents, including those who report they do not work at all for wages during the week. We find that sexual minority males report significantly more money from work per week than do heterosexual males, though there are no significant differences in money from other sources for the male sample. Among females, we find no significant differences for money received from work per week, though we do find that bisexual females receive significantly more money from "other sources", even after controlling for observable characteristics and institution fixed effects.

While "other sources" is not specifically defined on the survey, it is likely that this includes support from parents and other family members.

In Table 5 we report estimates for a variety of outcome variables meant to capture the idea of "social capital" and "connectedness". In Columns 1 and 2, for example, we consider a measure that should reflect the degree to which the student is integrated into the institution. Adjusted odds ratios from a logit estimation predicting the likelihood the student has a faculty or administrator she would approach to discuss a problem reveal that gay and bisexual men are well connected in this sense: both groups are significantly more likely to report the presence of a senior "confidant". We find smaller differentials for sexual minority females for this outcome, and none is statistically significant. Since friendship networks formed while in college may be important for economic success later in life, it is also useful to understand whether there are systematic differences in peer-based social capital by sexual orientation. We present OLS estimates on the number of reported close friends in Columns 3 and 4. Interestingly, we find that bisexual male and female students both report significantly fewer close friends than do heterosexual students. However, when we consider the number of hours per day on average spent socializing with friends in Columns 5 and 6, we find only one significant difference: bisexual women report spending more time socializing with friends, despite that they report fewer of them. Finally, in Columns 7 and 8 we present adjusted odds ratios from ordered logit models of the importance of participating in parties; coefficient estimates larger than one indicate the respondent places more importance on parties. We find that both gay and lesbian students place significantly lower importance on participating in parties while in college.

In Table 6 we directly explore differences in time use by sexual orientation. We present OLS estimates for the average number of hours per day spent watching tv/videos (Columns 1 and 2), participating in student organizations (Columns 3 and 4), and volunteering (Columns 5 and 6). We find a handful of significant differences for the male sample: sexual minority males (both gay and bisexual) spend significantly more time participating in student organizations and volunteering on average than do heterosexual students. Among females, we find smaller and fewer statistically significant differences, though we do estimate that bisexual female students spend significantly fewer hours watching television and significantly more hours in student organizations than do heterosexual students.

Finally, we present evidence from a series of questions about students' attitudes regarding participation in various activities while in college in Table 7. The set of activities we consider includes: participation in the arts (Columns 1 and 2), politics (Columns 3 and 4), and athletics (Columns 5 and 6). Among males, we find large and statistically significant differences in the odds of perceiving the various activities as relatively important. Specifically, we find that gay and bisexual male students have significantly higher odds of finding participation in the arts and politics to be important activities, while they have much lower odds compared to similarly situated heterosexual students of finding importance in athletics. Among females, we find similar but slightly more nuanced results: while it is true that sexual minority females (both lesbian and bisexual) have significantly higher odds of finding the arts and politics important, we find interesting differences for the case of athletics. Specifically, lesbian students have

significantly higher odds of finding athletic participation important, while bisexual female students have significantly lower odds of finding athletic participation important.

V. Discussion

In this section we discuss some implications of the patterns found above for recent research on gay/straight differences in schooling and earnings. Recall we hypothesized that one possible explanation for the higher college education rates for sexual minorities observed in multiple datasets could be that they have systematically "better" experiences while in college. For our gay male sample, we found some evidence for this hypothesis. Gay male students exhibited higher grade point averages, saw their academic work as more important, were more likely to report the presence of a close faculty member or administrator, and were more active participants in college activities (except athletics) than similarly situated heterosexual male students. Moreover, we did not find systematic evidence of "worse" outcomes for gay males on dimensions such as wages or social capital. These patterns paint a generally positive portrait of the college experiences of gay men and may help to explain their higher rates of college and post-college educational attainment: they have generally positive outcomes *in college*.[13] These findings for gay males also have some important implications for studies of gay/straight differences in labor market outcomes. To see this, note that academic performance is rarely observed or controlled for in income studies. Yet our results on differences in academic preparation suggest that gay males may have higher ability and unobserved motivation *for a given level of education* than their heterosexual counterparts. If so, then

[13] Note that the patterns of findings for gay men are also generally inconsistent with predictions form a Becker-type differential specialization model. A central prediction of this model is that gay men underinvest in labor market skills on the expectation that their partner will be relatively well endowed in

earnings differentials associated with sexual orientation will be biased upward even after conditioning on completed schooling.

For bisexual males, lesbian females, and bisexual females, the results were more mixed and suggested an alternative interpretation: these groups in many ways have systematically "different" – but not necessarily "better" – college experiences. Consider bisexual females: they exhibited much more dissatisfaction with their education and academic work, spent significantly less time studying, and reported far fewer close friends than similarly situated heterosexual female students.[14] Yet these same bisexual women were also active in college activities such as arts, politics, and student organizations. Clearly, more research is needed on young bisexual females to better understand their unique socioeconomic and health outcomes.

Finally, our results on time use and participation in various activities provide insight into gay/straight differentials in socioeconomic status. Specifically, our results point to important differences in choices regarding the allocation of time spent in student organizations and volunteer activities for sexual minority students. Given that all students face the same budget constraint with respect to hours in a day, these results provide interesting evidence of differential optimization for students of different sexual orientations.[15] With respect to participation in the arts and politics, our finding that sexual minority males and females find participation in these activities to be significantly more important than similarly situated heterosexual students could have implications for

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market production. Our results for gay males clearly contradict this prediction: gay male college students *overinvest* in academic and labor market activity relative to their heterosexual counterparts.

[14] These negative outcomes are consistent with other research that has used the Harvard CAS to look at health outcomes: Eisenberg and Wechsler (2003) found that bisexually behaving women in these data were significantly more likely to smoke cigarettes, binge drink, and use marijuana than other women.

[15] Recall that all the models include institution fixed effects; as such, differences in college propensities to offer certain activities does not explain the differences we observe.

understanding how gay, lesbian, and bisexual identities and friendship networks are formed in college. These differences in college activities could also underlie occupation choices in the labor market: Carpenter (2006), for example, finds that self-identified gay men in Canada are disproportionately represented in the arts and recreation occupations.

In summary, we have provided new direct evidence on the independent association between a minority sexual orientation – as proxied by lifetime same-sex sexual behavior – and a variety of previously unexplored outcomes for college students, including time use, academic performance, and social capital. Our findings are important in a broader context because they speak to the potential importance of omitted factors that may bias existing studies of sexual orientation based differences in socioeconomic status. We found statistically and economically meaningful differences in relevant college outcomes for sexual minority students. After controlling for observable demographic characteristics and college fixed effects, we found significant differences in academic outcomes, employment outcomes, and social capital for sexual minorities. These differentials, however, defied simple explanations and generally suggested that sexual minorities experience systematically different – but not necessarily "better" or "worse" – outcomes compared to heterosexual students. The one exception was for gay male students, who were generally estimated to have experiences that were no worse than heterosexual students and often more positive; this may help explain why gay men have such high college attainment rates. Although some features of the data limit our ability to generalize too broadly, our findings confirm the existence of a complex and important link between sexual orientation and outcomes in college.

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Table 1. Sample Size Comparisons, 1997, 1999, and 2001 CAS

Variable	Men	Women
1997 CAS		
Number GLB	210	349
Percent GLB	3.3	3.7
1999 CAS		
Number GLB	202	443
Percent GLB	3.7	4.6
2001 CAS		
Number GLB	189	451
Percent GLB	4.7	6.2
1997-2001 CAS		
Number GLB	601	1243
Percent GLB	3.8	4.7

Percentages reflect sampling weights.

Table 2. Sample Characteristics: 1997, 1999, and 2001 waves of the Harvard College Alcohol Study

	Males				Females			
Variable	No lifetime sexual activity	Opposite sex partners only	Both same and different sex partners	Only same sex partners	No lifetime sexual activity	Opposite sex partners only	Both same and different sex partners	Only same sex partners
18-20 yrs	.63	.43	.36	.40	.69	.49	.39	.36
21-24 yrs	.33	.44	.42	.42	.67	.38	.40	.39
25+ yrs	.04	.12	.22	.18	.04	.13.	21	.24
White	.70	.76	.73	.65	.68	.75	.73	.64
Black	.04	.07	.09	.09	.06	.08	.05	.10
Hispanic	.06	.09	.10	.12	.09	.09	.11	.11
GPA	3.18	3.08	3.11	3.16	3.28	3.19	3.28	3.21
Mom attended college	.70	.67	.72	.55	.70	.64	.68	.56
Dad attended college	.76	.72	.74	.58	.73	.66	.70	.61

Notes: Means are weighted.

Table 3. Academic Outcomes

Outcome ➔	(1) GPA	(2) GPA	(3) Time spent studying outside of class per day	(4) Time spent studying outside of class per day	(5) Overall satisfaction with education	(6) Overall satisfaction with education	(7) Perceived importance of academic work	(8) Perceived importance of academic work
Estimation Method	OLS	OLS	OLS	OLS	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit
Males								
Behaviorally Gay	.063*		.125		.823		1.41***	
	(.037)		(.092)		(.116)		(.186)	
Behaviorally Bisexual	-.001		.045		.716*		.825	
	(.048)		(.104)		(.140)		(.143)	
Behaviorally Gay or Bisexual		.036		.092		.777**		1.11
		(.032)		(.071)		(.095)		(.131)
N	15258	15258	15569	15569	15625	15625	15576	15576
Females								
Behaviorally Lesbian	-.015		.015		.876		.863	
	(.032)		(.069)		(.124)		(.115)	
Behaviorally Bisexual	.023		-.183***		.660***		.682***	
	(.024)		(.068)		(.061)		(.066)	
Behav. Lesbian or Bisexual		.009		-.110**		.732***		.742***
		(.020)		(.053)		(.057)		(.058)
N	24344	24344	24829	24829	24925	24925	24796	24796

Notes: Models include controls for no lifetime sexual behavior, age dummies, year in school dummies, black, Asian, other race, Hispanic, parental college attendance, survey year dummies, and institution fixed effects. We report adjusted odds ratios, standard errors, and statistical significance. * Statistically significant at the 10-percent level; ** Statistically significant at the 5-percent level; *** Statistically significant at the 1-percent level. For the OLS models we report coefficient estimates, standard errors, and statistical significance. Standard errors are clustered throughout at the institution level.

Table 4. Economic Outcomes

Outcome ➔	(1) Time spent working for wages per day	(2) Time spent working for wages per day	(3) Money from work per week	(4) Money from work per week	(5) Money from other sources per week	(6) Money from other sources per week
Estimation Method	OLS	OLS	Interval Regression	Interval Regression	Interval Regression	Interval Regression
Males						
Behaviorally Gay	.216*		2.93		.682	
	(.117)		(3.42)		(3.57)	
Behaviorally Bisexual	.218		10.71**		6.32	
	(.139)		(5.36)		(5.46)	
Behaviorally Gay or Bisexual		.217**		6.17**		3.03
		(.091)		(2.99)		(3.64)
N	15554	15554	15455	15455	15306	15306
Females						
Behaviorally Lesbian	.035		.402		-3.38	
	(.129)		(4.31)		(2.35)	
Behaviorally Bisexual	-.053		1.55		6.37**	
	(.100)		(3.20)		(2.69)	
Behav. Lesbian or Bisexual		-.020		1.13		2.77
		(.085)		(2.78)		(1.94)
N	24802	24802	24732	24732	24488	24488

See notes to Table 3.

Table 5. Social Capital/Connectedness

Outcome ➔	(1) Faculty or administrator could discuss problem with?	(2) Faculty or administrator could discuss problem with?	(3) Number of close friends	(4) Number of close friends	(5) Time spent socializing with friends per day	(6) Time spent socializing with friends per day	(7) Importance of participating in parties	(8) Importance of participating in parties
Estimation Method	Logit	Logit	OLS	OLS	OLS	OLS	Ordered Logit	Ordered Logit
Males								
Behaviorally Gay	1.37**		-.051		.005		.769**	
	(.209)		(.107)		(.091)		(.088)	
Behaviorally Bisexual	1.41**		-.313***		.046		.863	
	(.238)		(.119)		(.099)		(.149)	
Behaviorally Gay or Bisexual		1.39***		-.160*		.022		.806**
		(.171)		(.082)		(.070)		(.071)
N	15653	15653	15591	15591	15540	15540	15541	15541
Females								
Behaviorally Lesbian	1.04		-.057		-.052		.767**	
	(.121)		(.085)		(.090)		(.087)	
Behaviorally Bisexual	1.16		-.141**		.107*		1.01	
	(.112)		(.065)		(.062)		(.104)	
Behav. Lesbian or Bisexual		1.11		-.111**		.048		.914
		(.086)		(.052)		(.053)		(.072)
N	25000	25000	24903	24903	24808	24808	24749	24749

See notes to Table 3.

Table 6. Weekly Time Use

Outcome ➔	(1) Time spent watching tv/videos per day	(2) Time spent watching tv/videos per day	(3) Time spent in student organizations per day	(4) Time spent in student organizations per day	(5) Time spent volunteering per day	(6) Time spent volunteering per day
Estimation Method	OLS	OLS	OLS	OLS	OLS	OLS
Males						
Behaviorally Gay	-.077		.303***		.188***	
	(.090)		(.098)		(.072)	
Behaviorally Bisexual	-.145		.237**		.409***	
	(.124)		(.092)		(.101)	
Behaviorally Gay or Bisexual		-.106		.275***		.280***
		(.070)		(.071)		(.061)
N	15597	15597	15544	15544	15588	15588
Females						
Behaviorally Lesbian	-.049		.044		-.046	
	(.063)		(.061)		(.052)	
Behaviorally Bisexual	-.110**		.135*		-.056	
	(.051)		(.077)		(.043)	
Behav. Lesbian or Bisexual		-.087**		.102*		-.052
		(.039)		(.054)		(.036)
N	24896	24896	24791	24791	24895	24895

See notes to Table 3.

Table 7. Attitudes About Importance of Participating in Various College Activities

Outcome ➔	(1) Importance of participating in the arts	(2) Importance of participating in the arts	(3) Importance of participating in politics	(4) Importance of participating in politics	(5) Importance of participating in athletics	(6) Importance of participating in athletics
Estimation Method	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit	Ordered Logit
Males						
Behaviorally Gay	2.27***		1.57***		.462***	
	(.273)		(.189)		(.067)	
Behaviorally Bisexual	2.04***		1.63***		.376***	
	(.321)		(.232)		(.056)	
Behaviorally Gay or Bisexual		2.17***		1.59***		.424***
		(.232)		(.152)		(.044)
N	15505	15505	15532	15532	15590	15590
Females						
Behaviorally Lesbian	1.35***		1.33**		1.49***	
	(.155)		(.151)		(.165)	
Behaviorally Bisexual	2.08***		1.90***		.737***	
	(.186)		(.190)		(.072)	
Behav. Lesbian or Bisexual		1.78***		1.67***		.968
		(.127)		(.128)		(.079)
N	24696	24696	24740	24740	24823	24823

See notes to Table 3.