

Bad Education? College Entry, Health and Risky Behavior

Yee Fei Chia

Cleveland State University

Department of Economics

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ABSTRACT

The year following the last year of high school is often a period of changes in the lives of young adults. For incoming college freshmen, the transition from high school to college often brings about major changes in environment. The main objective of this paper is to examine the effects of college entry on changes in body weight, general health status and risky behavior for American young adults using individual-level panel data from the National Longitudinal Survey of Youth 1997. I compare students who entered college in the year right after the final year of high school to other young adults in the sample who did not enter college in the year right after the final year of high school. Since college entry is not randomly assigned, I implement a propensity score matching approach to correct for selection biases. The results suggest that college freshmen are more likely to report a gain in body weight and BMI and that they are less likely to report an improvement in health status. College entry also appears to be associated with increases in the number of days where alcohol was consumed and in the number of days where binge drinking occurred.

1. INTRODUCTION

The year following the last year of high school is often a period of changes in the lives of young adults. For incoming college freshmen, the transition from high school to university often brings about major changes in environment and for many of these young adults, the first year of university often gives them their first opportunities to make independent decisions. The change in environment associated with college entry can potentially have deleterious effects on the behavioral decisions and health outcomes of incoming college freshmen.

Anecdotal accounts about how college entry affects various aspects of the lives of young adults are deeply entrenched in popular culture. One of most widely held stereotypes about the college environment is that it is closely associated with widespread underage drinking and elevated alcohol and recreational drug usage. This stereotype is supported to a certain extent by the statistics. Figures from the 2007 National Survey on Drug Use and Health (NSDUH) suggest that young adults aged 18 to 22 who were enrolled full time in college were more likely than their peers in the same age group to use alcohol in the past month, binge drink, and drink heavily. However, they were less likely than their peers in the same age group to use illicit drugs (Substance Abuse and Mental Health Services Administration, 2008).¹

It is not entirely obvious whether alcohol and illicit drugs are substitutes or complements. Results from studies that have examined whether alcohol and illicit drugs

¹ The NSDUH is a yearly national-wide cross-sectional survey that collects data on the use of alcohol, tobacco, and illicit substances. The sample consists of 70,000 individuals, aged 12 and over. Heavy use of alcohol was defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on each of 5 or more days in the past 30 days. Binge use of alcohol was defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Heavy alcohol users also were defined as binge users of alcohol. Source: Substance Abuse and Mental Health Services Administration, 2008.

are substitutes or complements suggest that the relationship between alcohol use and drug use appears to differ between demographic groups. A recent study by Williams *et al.* (2004) suggests that for full-time college students, alcohol and marijuana are complements.

In addition to changes in behavior with regards to the consumption of alcohol and usage of illicit drugs, college entry might also affect aspects of physical health. One physical aspect that might potentially be affected by college entry is body weight. The phenomenon of weight gain during the first year in college is known in popular culture as the “freshman fifteen” phenomenon. The freshman fifteen phenomenon refers to the often-reported claim that college freshman typically report gaining fifteen pounds in the first year of university. The main potential causes for the weight gain include the easy availability of calorie-rich foods on campus, overeating due to stress associated with the transition to college and increased alcohol intake. Despite its place in popular culture, few studies have actually examined the freshman fifteen phenomenon. A recent study conducted by the University of Guelph in Canada using a sample of freshman students from the university suggests that while students do typically gain weight during the first year of college, the average weight gain is in the range of 5 to 6.6 pounds rather than the often-reported 15 pounds (Edmonds *et al.*, 2008, Pullman *et al.*, 2009).

The main objective of this paper is to quantify the effects of college entry on changes in body weight, general health status and risky behavior for American young adults using individual-level panel data from the National Longitudinal Survey of Youth 1997 (NLSY 97). In order to disentangle the effects of college entry from the effects of age, I compare students who entered college in the year right after the senior year of high

school to other young adults in the sample who did not enter college in the year right after the senior year of high school.

The main econometric issue associated with trying to measure the effects of college entry on health and behavioral outcomes is that college entry is not randomly assigned. As such, it is possible that underlying heterogeneity (rather than the college environment) might be driving any observed differences between college students and their non-college-enrolled peers. In order to correct for selection biases that might have arisen due to underlying heterogeneity, a propensity score matching approach is implemented in this paper.

The organization of the paper is as follows. Section 2.1 describes the data and the sample used for the analysis. Section 2.2 looks at the econometric model and econometric issues relevant to this study. Section 3 presents the results from the analysis and Section 4 concludes the paper.

2. METHODS

2.1 Data and Sample Selection

The data used in this paper comes from the first nine cycles of the National Longitudinal Survey of Youth 97 (NLSY 97). The NLSY 97 is a nationally representative longitudinal survey of American youths born between 1980 and 1984. The first cycle of the survey was conducted in 1997 and follow-up surveys have been conducted on an annual basis since then. The survey collects information on a wide range of topics. Most importantly for this paper, the NLSY 97 contains data on the respondent's educational status, background characteristics, behavior regarding alcohol and illicit drugs, health

status, height and weight. This paper makes use data collected over the period from 1997 to 2005. Over the course of this time period, the youths surveyed reached the period in their lives where they were transitioning out of high school and into university.

One of the issues involving studies that rely on samples that consist exclusively of college students is that it is not entirely obvious if any differences observed between college students and the general population can be mostly attributed to a college-attendance-specific effect or if a significant portion of the observed difference can be attributed to an age-specific effect. Being able to distinguish as to whether there is indeed a college-attendance-specific effect present might prove to be helpful in determining how policies aimed at improving outcomes can be targeted. As such, in this paper, I compare students who entered college in the year right after the senior year of high school to other young adults in the sample who did not enter college in the year right after the senior year of high school in order to disentangle the effects of college entry from the effects of age. The sample studied in this paper thus consists of individuals in the NLSY 97 survey who attended Grade 12² and for whom information for all of the variables used is available. These restrictions yield a sample size of 3258 observations.

The alcohol consumption component implemented in the NLSY 97 survey involves questions that examine the respondent's alcohol consumption in the month prior to the interview. Respondents were asked to report the number of days in the month prior to the interview where they consumed alcoholic beverages. The information collected from this question was used as one of the measures of alcohol consumption in this paper. In addition, respondents were also asked to report the number of days in the month prior to the interview where they consumed five or more alcoholic beverages over the span of

² Grade 12 is the final/senior year of secondary education under the American educational system.

twenty-four hours. The data collected from this question was used to generate the binge drinking variables studied in this paper.³

Similar to the alcohol consumption component of the survey, the illicit drug usage component in the NLSY 97 consists of questions that examine the respondent's usage of illicit drugs in the month prior to the interview. Respondents were asked to report the number of days in the month prior to the interview where they used marijuana. The information collected from this question was used to construct the marijuana usage variables.

Respondents were asked to report their heights and weights in each cycle. As such, it was possible to track changes in height and weight from year to year. Using the height and weight information, I also calculated the respondent's Body Mass Index (BMI).

Respondents were also asked to rate their general state of health on a scale of one to five (a rating of one being "excellent" and a rating of five being "poor") in each cycle. From the responses, I constructed indicator variables on whether the respondent's general state of health improved or deteriorated from the previous year.

The NLSY 97 contains information on the respondent's demographic characteristics. As such, I was able to control for the individual's gender, race, age and birth order in my analysis. The NLSY 97 also periodically collects information on the characteristics of the respondent's parents. One factor that potentially affects both college entry and the respondent's health and behavioral outcomes would be parental educational status. One might expect that the children of highly educated parents are more likely to

³ The definition of binge drinking in this paper follows the definition used by the Substance Abuse and Mental Health Services Administration whereby an episode of binge drinking is defined as the consumption of five or more alcoholic beverages over a twenty-four hour period.

attend college because of the intergenerational transfer of human capital. Results from previous studies in the economics literature suggest that the children of better-educated parents tend to have better educational outcomes (Chevalier, 2004, Oreopoulos *et al.*, 2006, Maurin and McNally, 2008). Previous studies also suggest that the children of more highly educated parents tend to have better health and behavioral outcomes (for a comprehensive review of studies that examine the effects of socioeconomic conditions on child outcomes, see Currie, 2009). As such, I control for whether the respondent's mother is college-educated and for whether the respondent's father is college-educated in my analysis.⁴ Another factor that potentially affects both college entry and the respondent's health and behavioral outcomes would be household income prior to the college entry decision being made. One of the main problems associated with getting an accurate measure of household income during the final years of high school is that the parents of the respondents were not interviewed in every cycle of the survey. As such, for most of the observations from the later cycles of the survey, information on household income is missing. The only cycle in which all parents were asked to provide information on household income was the first cycle of the survey conducted in 1997. Due to these data limitations, I use 1997 household income as the measure of income in the respondent's household prior to the college entry.

⁴ If information on the respondent's biological parents is available in the data, I use that information to generate the variables describing the parental characteristics. If information on the respondent's biological parents is not available in the data, I use information on the respondent's adopted parents to generate the variables describing the parental characteristics.

2.2. *Econometric Model and Methods*

In order to disentangle the effects of college entry from the effects of age, I compare students who entered college in the year right after the senior year of high school (treatment group) to other young adults in the sample who did not enter college in the year right after the senior year of high school (control group). As such, the treatment variable of interest is a binary variable that takes on a value of 1 if the respondent entered college in the year right after the senior year of high school and a value of 0 otherwise. The main model of interest can thus be represented as follows:

$$\Delta Y_i = \beta_0 + \text{Started College in Year After Grade 12}_i \cdot \beta_1 + X_i \cdot \beta_X + \varepsilon_i \quad (1)$$

where $\Delta Y_i = Y_{i, \text{year after grade 12}} - Y_{i, \text{grade 12}}$, *Started College in Year After Grade 12* is a binary variable that takes on a value of 1 if the individual entered college in the year after the senior year of high school and a value of 0 otherwise and X is a vector of background and demographic characteristics. The main outcomes (i.e. $\Delta Y_i = Y_{i, \text{year after grade 12}} - Y_{i, \text{grade 12}}$) studied in this paper are changes in body weight, BMI, general health status, alcohol usage and marijuana usage in the year following the senior year of high school. By looking at ΔY_i (rather than simply $Y_{i, \text{year after grade 12}}$) as the outcome, I can eliminate the effects of a possible time-invariant, individual-specific fixed effect that affects how the individual answers the survey questions that are used to generate the outcomes of interest.

The main econometric issue associated with the estimation of equation (1) is that selection into college is not exogenous. It is very plausible that there are underlying characteristics that affect both the outcomes of interest and college entry. To correct for potential selection biases, a propensity score matching approach is implemented in this

paper.⁵ I obtain estimates of the average treatment effect associated with college entry using four different propensity score matching estimators. The four propensity score matching estimators used in this paper are the Nearest Neighbor Matching Estimator, the Radius Matching Estimator, the Stratification Matching Estimator and the Kernel Matching Estimator.⁶ One of the main advantages to using matching estimators is that the specification of the functional form of the outcome equation is typically not required and as such, matching estimators are not susceptible to misspecification bias along this dimension (Todd, 2006).

The intuition behind the propensity score matching approach is that the bias on the estimated treatment effect is reduced when the comparison of the outcomes is performed using treated and comparable control subjects who are as similar as possible. Since it is typically not feasible to match observations based on a multi-dimensional vector of characteristics, the propensity score is used to summarize the underlying characteristics into a single index variable and the observations are then matched based on the values of their propensity score (Becker and Ichino, 2002). As such, in order to implement the propensity score matching estimators for this paper, the propensity score associated with starting college in the year after the senior year of high school was first estimated using probit.

After the propensity score was estimated, the treated observations (i.e. the individuals who started college in the year after the senior year of high school) were matched to “comparable” control observations (i.e. the individuals who did not start

⁵ One of the things to keep in mind is that while propensity score matching estimators reduce biases, they do not necessarily completely eliminate the biases present.

⁶ Equation (1) is also estimated using Ordinary Least Squares (OLS).

college in the year after the senior year of high school) based on their propensity scores by the matching estimators and the average treatment effects were then calculated.

The four different matching estimators implemented in this paper differ in terms of their advantages and disadvantages. One of the main issues associated with matching estimators is that there is a tradeoff between the quality and quantity of matches. On one hand, it is important to have high quality matches between treated and untreated observations that are as similar as possible in terms of their underlying characteristics in order to reduce potential biases in the estimated treatment effect. On the other hand, it is also important to have a sufficient quantity of matches so that the estimated treatment effect is calculated based on observations that are representative of the overall sample. The four different matching estimators implemented in this paper reach different points in terms of the tradeoff between quality and quantity and can thus theoretically produce estimates that are significantly different from one another. As such, if similar estimates of the treatment effect are obtained from the different estimators, it might provide more confidence in the conclusions reached.

The main advantage to the Stratification Estimator is that the matches between the treated observations and the control observations are of fairly high quality since this estimator assigns observations to intervals based on their propensity scores so that within each interval, treated observations and control observations have the same average propensity score. The main drawback to the Stratification Estimator is that treated observations that are assigned to intervals that do not contain both treated and control observations will not be included in the calculation of the average treatment effect (Becker and Ichino, 2002).

The Nearest Neighbor Estimator takes each treated observation and matches it with the control observation that has the closest propensity score.⁷ The main advantage associated with the Nearest Neighbor Estimator is that all of the treated observations are matched to control observations and none of the treated observations are excluded from the calculation of the average treatment effect. The main disadvantage associated with the Nearest Neighbor Estimator is that some of the matches will be of low quality in that the control observation that is the nearest neighbor might have a propensity score that is significantly different from that of the treated observation (Becker and Ichino, 2002).

The Radius Matching Estimator matches each treated observation with control observations whose propensity scores are within a predefined radius of the propensity score of the treated observation. The quality and quantity of the matches will depend on the width of the predefined radius. If the predefined radius is very small, the matches will be of high quality but there might be relatively few matches. If the predefined radius is larger, there will be more matches but they will be of lower quality (Becker and Ichino, 2002).

The Kernel Matching Estimator matches each treated observation with a weighted average of all control observations in the dataset with weights that are inversely proportional to the distance between the propensity score of the treated observation and the control observation. As such, all of the treated observations are used in the calculation of the average treatment effect (Becker and Ichino, 2002).

⁷ Note that a control observation can serve as the nearest neighbor match for more than one treated observation.

3. RESULTS

3.1 Summary Statistics

The means of the outcome variables examined in this paper are presented in Table I. In the sample, 1804 individuals entered college in the year right after the senior year of high school and these college freshmen serve as the treatment group for my analysis. 1454 individuals in the sample did not enter college in the year right after the senior year of high school and these non-college-enrolled individuals serve as the control group in my analysis.

College freshmen in the sample reported an average gain in weight of 4.35 pounds in the year following their senior year of high school while their non-college-enrolled peers reported an average gain in weight of 4.86 pounds in the year following their senior year of high school. 60.2% of the college freshmen reported that they had gained weight over the year while 57.1% of their non-college-enrolled peers reported that they had gained weight over the year. Since it is possible that changes in weight might have been accompanied by changes in height given the ages of the subjects, I also look at changes in the Body Mass Index (BMI) in this paper. The college freshmen in the sample saw an average increase in BMI of 0.577 units while their non-college-enrolled peers saw an average increase in BMI of 0.611 units. BMI increased for 62.3% of the college freshmen and for 58.7% of their non-college-enrolled peers.

To look at the effects of college entry on overall health status, I examine changes in the self-reported general state of health. The self-reported general state of health deteriorated compared to the previous year for 25.4% of the college freshmen and for 24.6% of their non-college-enrolled peers. College freshmen were less likely to report an

improvement in their general state of health (17.9%) compared to their non-college-enrolled counterparts (23.1%).

In terms of changes in alcohol consumption, college freshmen increased the number of days that they consumed alcohol in the month prior to the interview by an average of 1.99 days compared to their senior year in high school. 46.6% of college freshmen reported an increase in the number of days that they consumed alcohol in the month prior to the interview compared to their senior year in high school. In contrast, their non-college-enrolled peers increased the number of days that they consumed alcohol in the month prior to the interview by an average of 0.78 days compared to their senior year in high school. 34.7% of the non-college-freshmen control observations reported an increase in the number of days that they consumed alcohol in the month prior to the interview compared to their senior year in high school.

The college freshmen in the sample also increased the number of days where they binge drank in the month prior to the interview by an average of 0.99 days and 29.6% of the college freshmen reported an increase in the number of days where they binge drank in the month prior to the interview. In contrast, their non-college-enrolled peers increased the number of days where they binge drank in the month prior to the interview by an average of 0.48 days and 22.5% of the non-college-enrolled control group reported an increase in the number of days where they binge drank in the month prior to the interview.

With regards to changes in marijuana usage, college freshmen increased the number of days that they used marijuana in the month prior to the interview by an average of 0.65 days compared to their senior year in high school. 15.6% of the college

freshmen in the sample increased the number of days they used marijuana in the month prior to the interview compared to their senior year in high school. Their non-college-enrolled peers increased the number of days that they used marijuana in the month prior to the interview by an average of 0.45 days compared to their senior year in high school. 12.6% of the non-college-freshmen control observations reported an increase in the number of days that they used marijuana in the month prior to the interview compared to their senior year in high school.

The means of the variables describing the background and demographic characteristics of the sample are presented in Table II. There are several key differences in the average background and demographic characteristics between the treatment group and the control group. Individuals who entered college in the year right after the senior year of high school are more likely to have college-educated parents, to be the firstborn child in the family, to be White or Asian, and are less likely to be male, Black or Latino compared to individuals who did not enter college in the year right after the senior year of high school. The average 1997 household income of individuals who entered college in the year right after the senior year of high school is around \$21,000 higher than the average household income of individuals who did not enter college in the year right after the senior year of high school. The average age of the mother at birth is also higher for individuals who entered college in the year right after the senior year of high school.

3.2 The Effects of College Entry on Changes in Body Weight and BMI

Table III summarizes the estimates of the effects of college entry on changes in body weight and BMI from the Ordinary Least Squares (OLS), Nearest Neighbor

Matching, Radius Matching, Stratification Matching and Kernel Matching Estimators.⁸

The results from all of the estimators suggest that there does not appear to be a significant difference in the average change in body weight between the college freshmen and their non-college-enrolled peers. This implies that the freshman fifteen phenomenon might be part of a more widespread phenomenon of weight gain by young adults during their late teens and early twenties.

The estimates obtained from the OLS, Nearest Neighbor Matching Stratification Matching and Kernel Matching estimators when the outcome studied is a binary variable for the individual reporting a gain in body weight over the year following the senior year of high school suggest that college entry is associated with an increase in the probability that the individual reports gaining weight over the year following the senior year of high school that is in the range of 3.4 to 4.8 percentage points. The estimate for the average treatment effect for the weight gain dummy variable obtained from the Radius Matching Estimator is positive but statistically insignificant.

I also examine changes in the Body Mass Index (BMI) in this paper. Similar to the results for the average change in body weight, the results from all of the estimators suggest that there does not appear to be a significant difference in the average change in BMI between the college freshmen and their non-college-enrolled peers.

The estimates obtained from the OLS, Radius Matching, Stratification Matching and Kernel Matching estimators when the outcome studied is a binary variable for the individual experiencing an increase in BMI over the year following the senior year of

⁸ The results from the probit regression that was used to produce the propensity score are summarized in Appendix Table I. The balancing property is satisfied for each of the covariates used to estimate the propensity score. This means that the means of all of the covariates used in estimating the propensity score do not differ between treated and control observations within each interval.

high school suggest that college entry is associated with an increase in the probability that the individual experiences an increase in BMI over the year following the senior year of high school that is in the range of 3.5 to 4.4 percentage points. The estimate for the average treatment effect for the weight gain dummy variable obtained from the Nearest Neighbor Matching Estimator is positive but statistically insignificant.

The results obtained for changes in body weight and BMI appear to suggest that that the “freshman fifteen” phenomenon might be part of a more widespread phenomenon of weight gain and BMI increases by young adults during their late teens and early twenties. However, it also appears that college freshmen might be more prone to increases in body weight and BMI compared to their non-college-enrolled counterparts.

3.3 The Effects of College Entry on Changes in Self-Reported Health Status

Table IV summarizes the estimates of the effects of college entry on changes in the respondent’s self-reported state of health.

The results presented in part (a) of Table IV suggest that college entry does not appear to have a discernable effect on whether the individual’s self-reported general state of health deteriorated over the year following the senior year of high school. On the other hand, the estimates obtained from the OLS, Radius Matching, Stratification Matching and Kernel Matching estimators when the outcome studied is a indicator variable for an improvement in the individual’s self-reported general state of health over the year following the senior year of high school (part (b) of Table IV) suggest that the college entry is associated with a decrease in the probability that the individual reports an improvement in his/her self-reported general state of health that is in the range of 3.8 to 4.9 percentage points. The estimate for the average treatment effect for the health

improvement dummy variable obtained from the Nearest Neighbor Matching Estimator is negative but statistically insignificant.

The results obtained suggest that while college entry does not appear to have a negative impact on the overall state of health, college freshmen appear less likely to report an improvement in overall health compared to their non-college-enrolled peers.

3.4 The Effects of College Entry on Changes in Alcohol Consumption

Table V presents the effects of college entry on changes in the number of days that alcohol was consumed in the month prior to the interview. The estimates obtained from the various estimators suggest that on average, college entry is associated with an increase in the number of days that alcohol was consumed in the 30 days prior to the interview that is in the range of 0.86 to 1.14 days. Compared to their non-college-enrolled peers, college freshmen are more likely to report an increase in the number of days that they consumed alcohol by around 8 to 11.3 percentage points.

One might make the argument that the consumption of alcohol *per se* does not necessarily constitute as risky behavior and that it is actually excessive alcohol consumption within a short period of time that really constitutes as risky behavior. Table VI examines the effects of college entry on changes in the number of days that binge drinking occurred in the month prior to the interview. The estimates obtained from the various estimators suggest that on average, college entry is associated with an increase in the number of days that episodes of binge drinking occurred in the month prior to the interview that is in the range of 0.36 to 0.44 days. Compared to their non-college-enrolled counterparts, college freshmen are more likely to report an increase in the number of days

that they binge drank in the month prior to the interview by around 3.9 to 7.1 percentage points.

The results obtained from the various estimators appear to support the popular stereotype that the college environment is associated with elevated underage alcohol consumption.⁹ The increase in episodes of binge drinking associated with college entry might be of particular concern to college administrators since excessive alcohol consumption might be associated with increases in acts of anti-social activities on college campuses.

3.5 The Effects of College Entry on Changes in Marijuana Usage

Table VII summarizes the estimates of the effect of college entry on changes in the usage of marijuana. The results obtained from the various estimators generally suggest that college entry does not appear to have much of an impact on changes in marijuana usage. The only exception is the positive and statistically significant estimate that is obtained from the Radius Matching Estimator when the outcome of interest is a dummy variable for an increase in the number of days where marijuana was used.

4. DISCUSSION

For many young adults, the first year of college offers a dramatic change in environment and an increase in the freedom of personal choice. There is a concern that these changes might potentially have deleterious effects on the health and behavioral outcomes of college students. This paper attempts to quantify the effects of college entry on changes in body weight, BMI, general health status and risky behavior for American

⁹ The observations in the sample are below the age of 21, which is typically the legal drinking age in the United States.

young adults. In order to disentangle the effects of college entry from the effects of age, I compare students who entered college in the year right after the senior year of high school to other young adults in the sample who did not enter college in the year right after the senior year of high school. A propensity score matching approach is implemented to reduce the biases in the estimation of the average treatment effects associated with college entry.

Overall, the results obtained in this paper suggest that college entry might have deleterious effects on some of the behavioral decisions and health outcomes examined. Compared to their non-college-enrolled counterparts, college freshmen are more likely to experience increases in body weight and BMI and they are less likely to report improvements in their overall health status. The results obtained in this paper also suggest that college entry is associated with increases in alcohol consumption. In particular, college entry is associated with increases in binge drinking episodes, a result that might be of particular concern to university administrators since excessive alcohol consumption might be associated with increases in acts of anti-social activities on university campuses. Policies that are targeted towards improving the health and behavioral outcomes of college students (e.g. more on-campus counseling services offered by health professionals) might be helpful in alleviating some of these effects.

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Ethics Statement: The research undertaken in this paper does not involve experiments performed on identifiable human test subjects or animal test subjects.

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Table I: Sample Means for Outcome Variables

	Overall	College	Non-College
ΔWeight	4.576	4.345	4.862
Weight Increased	0.588	0.602	0.571
ΔBMI	0.592	0.577	0.611
BMI Increased	0.607	0.623	0.587
Health Deteriorated	0.250	0.254	0.246
Health Improved	0.202	0.179	0.231
Δ (# of Days Drank Alcohol in Month Prior to Interview)	1.452	1.991	0.783
Increase in # of Days Drank Alcohol	0.413	0.466	0.347
Δ (# of Days of Binge Drinking in Month Prior to Interview)	0.759	0.986	0.479
Increase in # of Days of Binge Drinking	0.264	0.296	0.225
Δ (# of Days Used Marijuana in Month Prior to Interview)	0.562	0.649	0.453
Increase in # of Days Used Marijuana	0.142	0.156	0.126
Observations	3258	1804	1454

Table II: Sample Means for Background Variables

	Overall	College	Non-College
Age	18.412	18.325	18.519
Firstborn	0.521	0.545	0.490
Male	0.486	0.435	0.550
Black	0.188	0.165	0.217
Latino	0.082	0.062	0.108
Asian	0.019	0.024	0.012
White	0.690	0.728	0.642
Household Income in 1997	55337.330	64826.130	43564.430
Age of Mother at Birth	26.032	26.796	25.084
Post-secondary Education for Mother	0.379	0.484	0.249
Post-secondary Education for Father	0.362	0.466	0.232
Rural	0.265	0.262	0.268
Observations	3258	1804	1454

Table III: Estimates of the Effects of College Entry on Changes in Body Weight and BMI

(a) Changes in Body Weight

	Δ Weight OLS	Δ Weight NNM	Δ Weight Radius	Δ Weight Strat.	Δ Weight Kernel	Weight Inc OLS	Weight Inc NNM	Weight Inc Radius	Weight Inc Strat.	Weight Inc Kernel
Started college in year	-0.14374	-0.494	-0.636	-0.25	-0.437	0.03795	0.048	0.029	0.039	0.034
after grade 12	[0.27]	[0.595]	[1.255]	[0.454]	[0.767]	[2.02]*	[1.736]+	[1.616]	[1.870]+	[1.912]+
Observations	3258	3258	3258	3258	3258	3258	3258	3258	3258	3258

(b) Changes in BMI

	Δ BMI OLS	Δ BMI NNM	Δ BMI Radius	Δ BMI Strat.	Δ BMI Kernel	BMI Inc OLS	BMI Inc NNM	BMI Inc Radius	BMI Inc Strat.	BMI Inc Kernel
Started college in year	0.00667	-0.073	-0.048	-0.023	-0.049	0.04133	0.04	0.035	0.044	0.038
after grade 12	[0.07]	[0.520]	[0.474]	[0.232]	[0.456]	[2.19]*	[1.484]	[1.957]*	[2.092]*	[1.751]+
Observations	3258	3258	3258	3258	3258	3258	3258	3258	3258	3258

Absolute values of t statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

OLS=Ordinary Least Squares, NNM=Nearest Neighbor Matching, Radius=Radius Matching

Strat=Stratification Matching, Kernel=Kernel Matching

Table IV: Estimates of the Effects of College Entry on Self-Reported Health Status Changes

(a) Health Status Deteriorated

	Health Det.	Health Det.	Health Det.	Health Det.	Health Det.
	OLS	NNM	Radius	Strat.	Kernel
Started college in year	-0.0033	-0.032	0.002	-0.021	-0.02
after grade 12	[0.20]	[1.300]	[0.102]	[1.079]	[1.242]
Observations	3258	3258	3258	3258	3258

(b) Health Status Improved

	Health Im.	Health Im.	Health Im.	Health Im.	Health Im.
	OLS	NNM	Radius	Strat.	Kernel
Started college in year	-0.04546	-0.026	-0.049	-0.038	-0.038
after grade 12	[2.96]**	[1.131]	[3.284]**	[2.249]*	[2.495]**
Observations	3258	3258	3258	3258	3258

+ significant at 10%; * significant at 5%; ** significant at 1%

OLS=Ordinary Least Squares, NNM=Nearest Neighbor Matching, Radius=Radius Matching
 Strat=Stratification Matching, Kernel=Kernel Matching

Table V: Estimates of the Effects of College Entry on Changes in the Number of Days Where Alcohol was Consumed

	Δ # of Days Drank OLS	Δ # of Days Drank NNM	Δ # of Days Drank Radius	Δ # of Days Drank Strat.	Δ # of Days Drank Kernel
Started college in year	1.00096	0.861	1.135	1.045	1.042
after grade 12	[5.13]**	[3.009]**	[5.930]**	[4.708]**	[4.646]**
Observations	3258	3258	3258	3258	3258

	Inc. Days Drank OLS	Inc. Days Drank NNM	Inc. Days Drank Radius	Inc. Days Drank Strat.	Inc. Days Drank Kernel
Started college in year	0.08054	0.096	0.113	0.087	0.093
after grade 12	[4.34]**	[3.602]**	[6.325]**	[4.163]**	[4.674]**
Observations	3258	3258	3258	3258	3258

Absolute values of t statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

OLS=Ordinary Least Squares, NNM=Nearest Neighbor Matching, Radius=Radius Matching

Strat=Stratification Matching, Kernel=Kernel Matching

Table VI: Estimates of the Effects of College Entry on Changes in Number of Days Where Binge Drinking Occurred

	Δ # of Days Binge Drank	Δ # of Days Binge Drank	Δ # of Days Binge Drank	Δ # of Days Binge Drank	Δ # of Days Binge Drank
	OLS	NNM	Radius	Strat.	Kernel
Started college in year	0.36333	0.401	0.442	0.436	0.425
after grade 12	[2.78]**	[2.063]*	[3.459]**	[2.781]**	[2.877]**
Observations	3258	3258	3258	3258	3258

	Inc. Days Binge Drank	Inc. Days Binge Drank	Inc. Days Binge Drank	Inc. Days Binge Drank	Inc. Days Binge Drank
	OLS	NNM	Radius	Strat.	Kernel
Started college in year	0.04225	0.039	0.071	0.052	0.055
after grade 12	[2.60]**	[1.649]+	[4.416]**	[2.785]**	[3.489]**
Observations	3258	3258	3258	3258	3258

Absolute values of t statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

OLS=Ordinary Least Squares, NNM=Nearest Neighbor Matching, Radius=Radius Matching

Strat=Stratification Matching, Kernel=Kernel Matching

Table VII: Estimates of the Effects of College Entry on Changes in Number of Days Where Marijuana was Used

	Δ # of Days Used Pot	Δ # of Days Used Pot	Δ # of Days Used Pot	Δ # of Days Used Pot	Δ # of Days Used Pot
	OLS	NNM	Radius	Strat.	Kernel
Started college in year	0.17622	-0.047	0.258	0.055	0.073
after grade 12	[0.81]	[0.136]	[1.248]	[0.202]	[0.281]
Observations	3258	3258	3258	3258	3258

	Inc. Days Used Pot	Inc. Days Used Pot	Inc. Days Used Pot	Inc. Days Used Pot	Inc. Days Used Pot
	OLS	NNM	Radius	Strat.	Kernel
Started college in year	0.01721	0.004	0.031	0.009	0.01
after grade 12	[1.28]	[0.199]	[2.415]*	[0.576]	[0.635]
Observations	3258	3258	3258	3258	3258

Absolute values of t statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

OLS=Ordinary Least Squares, NNM=Nearest Neighbor Matching, Radius=Radius Matching

Strat=Stratification Matching, Kernel=Kernel Matching

Appendix Table I: Estimation of Propensity Score

	Entered College
Male	-0.3172416 [6.8]**
Black	-0.0038571 [0.06]
Latino	-0.112017 [1.27]
Asian	-0.0390063 [0.22]
Age	-0.2617505 [6.73]**
Firstborn	0.1987609 [4.03]**
Household Income in 1997	0.0000052 [7.69]**
Household Size	0.0002866 [0.02]
Age of Mother at Birth	0.0279012 [5.44]**
Post-secondary Education for Mother	0.3362655 [6.16]**
Post-secondary Education for Father	0.2950912 [5.23]**
Rural	0.032122 [0.6]
Constant	3.781742 [5.07]**
Observations	3258

Absolute value of Z statistics in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

Dependent variable=1 if individual entered college in year after senior year of high school

Dependent variable=0 otherwise

The balancing property is satisfied for each of the covariates used to estimate the propensity score.

The satisfaction of the balancing property means that the means of all of the covariates used in estimating the propensity score do not differ between treated and control observations within each interval.