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Associations between Civic Engagement and Community College Completion in a Nationally Representative Sample of Young Adults

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Abstract

Educational attainment is associated with voting and political trust, but less is known about whether voting and political trust are associated with subsequently higher educational attainment. In a sample of voting-age two-year college students in the National Longitudinal Study of Adolescent and Adult Health ($n=1212$), this study identified three markers of civic engagement in 2001 associated with greater attainment of certificates, associates degrees, and bachelor's degrees in 2008: voting, trusting the federal government, and affiliating with a political party. To minimize confounding, we used multivariate regression after exact and nearest-neighbor Mahalanobis matching within propensity score calipers on pre-college parent and adolescent socioeconomic status, demographics, educational expectations, health status, and parent civic participation. Voting in the 2000 presidential election was associated with greater likelihood of attaining a BA, or above; trusting the federal government was associated with greater likelihood of earning a certificate, associate's degree, or BA or above; and affiliating with a political party predicted greater likelihood of earning an associate's degree or BA, or above. These results suggest that two-year colleges that encourage voter registration and political activities may increase their students' engagement and educational attainment.

The United States has high college access, but low completion rates; improving the community college graduation rate was a central focus of President Obama's post-secondary education policy. The prevalent model for college completion, Tinto's model, posits that students with greater academic and social integration are more likely to complete college, but the applicability of the concept of social integration in the community college context has been debated (Bailey & Alfonso, 2005; Rosenbaum, 2018; Tinto, 1993). Given their relative lack of dormitories and extracurricular activities, two-year colleges offer their students fewer opportunities for social integration than four-year colleges (Flowers, 2006), so another kind of integration may be needed to supplement campus social integration. For community college students, civic integration may play the same role for community college students as social integration at four-year institutions, as a mechanism to create social capital and promote community college graduation. Using a nationally representative sample, this study tests the hypothesis that community college students with greater civic engagement

have higher educational attainment seven years later. We use a propensity matching method to reduce selection bias.

Civic Engagement and Education

As Alexis de Tocqueville noted, civic participation is a cultural feature of the United States (1835). Research on civic engagement has focused primarily on Emile Durkheim's contention that schools teach civic norms and responsibilities (Durkheim, 1925), suggesting that higher education increases civic engagement. Past research has found that college increases subsequent civic engagement (Brand, 2010). Analyzing a nationally representative sample of youth who were teenagers in 1979, Brand (2010) confirmed prior research that college increases subsequent civic participation, and that respondents with lower predicted propensity of college attendance (who nonetheless attended college) gained the most in civic participation; others have found greater civic engagement among students in residential four-year colleges than non-residential (Evans, Marsicano, & Lennartz, 2019), and studied civic engagement among students attending minority-serving institutions (Fassett, Priddie, BrckaLorenz, & Kinzie, 2018).

The opposite may also be the case: civic engagement could increase college completion. A study of President Clinton's Learn and Serve America Higher Education Program found that undergraduates who participated in community service had better short- and long-term outcomes in many cognitive and affective domains, including academic development, life skill development, and civic responsibility (Astin & Sax, 1998). Following 3450 entering freshmen in 42, four-year colleges, Astin and Sax (1998) found that undergraduates who performed community service had greater academic outcomes including grades, college persistence, educational aspirations, increased general and field-specific knowledge, greater preparation for graduate or professional school, better academic self-concept, more time studying or doing homework, extra work done for courses, and amount of contact with faculty. The study controlled for individual student characteristics, including the propensity to engage in service. The authors noted that this finding is in contrast to the common concern "that volunteering consumes time and energy that the student might otherwise devote to academic pursuits" (Astin & Sax, 1998, p. 257). A subsequent study looked at the long-term effects of volunteerism during the undergraduate years for students who entered four-year colleges in 1985, followed through 1994–1995 ($n=12,376$ in 209 institutions, 51% follow-up rate) (Astin, Sax, & Avalos, 1999). The results indicated that undergraduates who volunteered in college had greater rates of graduate school attendance, higher educational attainment, higher educational aspirations, and greater belief that college gave the student good career preparation, among other outcomes. A study of the sibling pairs in Add Health found that both voluntary and involuntary volunteering is associated with more years of educational attainment (Kim & Morgül, 2017); in the sample of sibling pairs, about 10% were currently enrolled in community college.

All of these studies focused either on students in four-year colleges or the general population of young adults, but the relationship between civic engagement and educational attainment may work differently for students in two-year colleges. Two-year colleges are implementing programs to increase civic engagement among their students (Kisker, 2016; Turner, 2016),

but researchers studying these programs have not been able to study the impacts of civic engagement in a nationally representative study over a seven year period, as this study does.

Civic Engagement and Community College Completion

Tinto's model of student retention.

Tinto's model of student retention posits that academic and social integration are key factors in college persistence (Tinto, 1975). Tinto and other researchers have speculated that social integration may not apply to community colleges due to having fewer on-campus institutions to promote social capital, such as dormitories and activities (Tinto, 1993). However, the hypothesis that social integration increases community college completion is supported by recent studies, including results finding that a social belonging intervention can improve retention in a community college system (Silver Wolf, Perkins, Butler-Barnes, & Walker, 2017); observational study finding that community college students with on-campus housing are more likely to complete college than matched non-residential community college students (Turk & Canché, 2019); and that community college students with stigmatized health conditions are less likely to complete community college than students without stigmatized health conditions (Rosenbaum, 2018). Earlier research has found that markers of social integration do not predict persistence (Borglum & Kubala, 2000) and institutional efforts to promote social integration have not yielded greater persistence (Bailey & Alfonso, 2005). Other researchers have identified markers of social integration at community college (Deil-Amen, 2005; Karp, Hughes, & O'Gara, 2010), and found that community college students who transferred to four-year institutions integrated in a manner similar to traditional four-year college students (Townsend & Wilson, 2009). Community college students may nonetheless experience less social integration than comparable students at four-year colleges, as demonstrated in one study of African-American males in the 1996–1998 Beginning Postsecondary Students Longitudinal Study (Flowers, 2006).

In the absence of college-specific institutions to foster social integration, the notion of social integration might also be considered as integration with society. For community college students, civic engagement may take the place of social integration in Tinto's model for student retention. Individuals with greater civic engagement may also see greater value to education: to understand their role in society, become more effective, and acquire the credentials necessary to have an impact on society. Many community college degree programs require general education, including courses in English, history, social sciences, geography, and government. These general education classes and their remedial prerequisites are where many community college students drop out, and students sometimes report that they do not see any purpose to these courses (Rosenbaum, Deil-Amen, & Person, 2006; Rosenbaum, Becker, Cepa, & Zapata-Gietl, 2016). Civic engagement gives contacts, responsibilities, a sense of belonging, a feeling of agency to choose the country's political leaders, and self-efficacy to understand current events, which may help students see the purpose of their studies. Individuals who are more disengaged or mistrustful of government may, conversely, have more difficulty persisting in college.

Civic Engagement at Community Colleges: Research Gaps

Two-year colleges are increasingly seeking to foster civic engagement among their students (Kisker, 2016; Turner, 2016), but no research has evaluated whether community college students with greater civic engagement have better subsequent long-term educational attainment. Budget constraints at community colleges may tempt administrators to cut these civic engagement programs, seeing them as an extracurricular activity that is a distraction from studies, rather than a useful adjunct to promote and reinforce better educational outcomes for students.

Objectives and Purposes

This research identifies which types of civic engagement among community college students are associated with higher educational attainment seven years later using bivariate, multivariate, and propensity matching analyses. First, we performed bivariate analysis to identify which of all 22 measures of civic engagement were associated with higher educational attainment. Second, the eight civic engagement measures that were significantly associated with graduation in bivariate regression were used in multivariate regression, controlling for pre-college variables. Third, the three civic engagement measures that were significantly associated with higher educational attainment were used in a propensity matching method that matched community college students on pre-college variables, to minimize the chances that the associations between civic engagement and educational attainment were attributable to self-selection bias. Students with greater civic engagement may be more likely to have higher educational attainment for reasons unrelated to their civic engagement, so the propensity matching method identifies community college students who are highly comparable on pre-college variables. After propensity matching, the multivariate regressions were repeated.

Methods

Data

We tested the hypothesis that civic engagement predicts community college completion and educational attainment in the National Longitudinal Study of Adolescent and Adult Health (Add Health) dataset (Harris, 2009; Harris et al., 2009). A sample of students who were representative of all US students enrolled in grades 7–12, in public and private schools, were surveyed in four waves of in-home interviews in 1995, 1996, 2001, and 2008. To improve self-reporting of sensitive behaviors, Add Health used an audio computer-assisted self-interview component (Harris et al., 2009). For this study, the sample was restricted to respondents who in 2001 were eligible to vote in the 2000 presidential election (US citizens who were age 18 or above on November 7, 2000), had graduated high school, not attained an AA or BA, and were enrolled in community college ($n=1212$).

In order to ensure temporal ordering and avoid bias due to controlling for intermediate variables, we used control variables from the baseline survey in 1995 (ages 12–18), the predictor variable of civic participation during college from 2001 (ages 18–24), and the outcome of educational attainment from 2008 (ages 26–32). This research design ensures

that control variables preceded civic participation during college, and that civic participation during college preceded college graduation.

Measures

Outcome measures: Educational attainment.—Educational attainment was measured in 2008 as the highest degree listed in a detailed history of every degree attained. Respondents attained their highest degree 3–13 years after wave 1. We defined four binary variables for educational attainment: high school diploma or above, community college certificate or above, associate’s degree or above, and bachelor’s degree or above.

Predictor variables: Civic engagement.—Because of the sparse prior literature about civic engagement among a nationally representative sample of community college students, the study aimed to identify which civic engagement measures are associated with greater educational attainment among community college students. Hence, the preliminary bivariate analysis used all 22 civic engagement measures in 2001, the year when college enrollment was measured. Civic engagement included political participation (six measures including voter registration, voting in the most recent presidential election); trust of government (six measures: trust and distrust of federal, state, and local governments); political affiliation (three measures including party affiliation); and volunteerism (seven measures including community service in past 12 months, blood donation). The exact wording and response choices for each of the 22 variables appears in Table 1.

Control variables.—Pre-college variables were measured in 1995 when the respondents were ages 12–18 and included socioeconomic status, demographics, education, and health status. The full set of measures is listed in Table 2.

The control variables were derived from earlier work on civic engagement also using the Add Health data, using a resiliency framework (Duke, Skay, Pettingell, & Borowsky, 2009; Resnick et al., 1997; Resnick, Ireland, & Borowsky, 2004). Socioeconomic status measures included parent-reported education level, parent-reported household income (on a log scale), and parent-reported response to whether the household has enough money to pay bills. Demographics measures included gender, race, ethnicity, age, and parent/student nativity. The educational variables were intention to attend college (4-point Likert-like scale) and the Peabody Vocabulary Test percentile. Positive expectancies were based on items including whether the respondent expected to live until age 35, to contract HIV, and to get married.

Missing data.—Binary covariates were defined as 1 if the respondent endorsed the item and 0 otherwise, including missing values. Missing values in continuous covariates including aggregate variables were mean-imputed with an indicator for missingness. Missing values in parent-reported household income was singly imputed with an indicator for missingness, using linear regression on log household income with predictors parent educational level, parent educational level missing, Black race, Asian race, Hispanic ethnicity, nativity, parent nativity, and parent-reported whether the family has enough money to pay bills.

Analysis

Data analyses were conducted in Stata SE 15.1 and R 3.5.3. The analysis comprised three stages: bivariate analysis, multivariate analysis, and multivariate analysis after a propensity matching method.

Bivariate analysis.—For each of the 22 measures of civic participation, we used Cuzick’s test for trend to assess whether greater levels of civic participation in 2001 were associated with higher educational attainment in 2008, across the categories of high school diploma, certificate, associate’s degree, and BA, or above. In bivariate analysis, eight civic participation measures were associated with greater educational attainment (Table 3). We used these eight measures as predictors in multivariate analysis.

Multivariate analysis before propensity matching.—Community college can lead to three levels of educational outcomes, so we examine the association between civic engagement and three levels of educational attainment: certificate or above, AA or above, and BA or above. The main predictor variables in the multivariate analysis model were the eight measures of civic engagement that were significant in bivariate analysis. Because four of the six governmental trust and distrust variables were statistically significant in bivariate analysis, and all are conceptually related, we used all six trust and distrust variables.

The multivariate analysis model was formed using Gelman and Hill’s guidelines for variable choice (2007). The final multivariate model controlled for the following potential confounders that were chosen from past literature about civic engagement among college students in these data (Duke et al., 2009): demographics (gender, Latino/Asian/African-American race/ethnicity, age in 2008), educational variables (grade point average, test score), expectations (college attendance intentions, positive expectancies index), parent background (educational level, nativity, enough money to pay bills, household income, speak English at home), college enrollment variables measured in 2001 (gap of at least a year between high school graduation and college enrollment, attend college full-time, age of high school graduation.) The multivariate analysis used a Poisson working model because estimators from logistic regression are inconsistent when the outcomes are not rare, as is the case for these outcomes; Poisson regression yields consistent and unbiased estimators that are more easily interpreted than the results of logistic regression (Cummings, 2009; Lumley, Kronmal, & Ma, 2006; McNutt, Wu, Xue, & Hafner, 2003).

We identified the measures of civic participation associated with greater likelihood of attaining all three post-secondary educational attainments using the multivariate models described above to reduce the chances of false significance due to multiple comparisons. Using an alpha of 0.05 for significance, the chance of falsely accepting the null hypothesis for all three educational attainments is 0.000125 ($0.05^3=0.000125$). Three civic participation outcomes were associated with greater likelihood of all three educational attainments (Table 4): voting in the 2000 presidential election, affiliating with a political party, and trusting the federal government. To evaluate whether these associations could be explained by self-selection such as by socioeconomic status, we evaluated these associations after using a propensity matching method, as described in the following section.

Motivation for propensity matching.—Propensity matching methods include about a dozen methods, including matching on estimated propensity scores. Propensity matching methods model the process of how individuals self-select into *treatment* (in this case, civic engagement) or *control* (no civic engagement) groups by matching on covariates that are associated with treatment status in order to reduce selection bias (Gelman & Hill, 2007; Morgan & Winship, 2015; Rubin, 1973, 1974, 2006). Using a model for the process of self-selection, propensity matching methods create a comparison group that is more clearly comparable to the treatment group on pre-treatment attributes. When propensity matching has constructed a comparison group that is sufficiently similar to the treatment group on variables relevant to the assignment mechanism, the groups are said to be *balanced*. For balanced groups, treatment assignment is ignorable on both observed covariates and on unobserved covariates that are correlated with observed covariates; i.e., the individuals in the treatment group cannot be explained by their background attributes (Rubin, 1973, 1974, 2006). After balance has been achieved, data analysis can be conducted within the matched dataset as usual, including standard regression methods to test hypotheses. In this study, the goal of matching is make voting and non-voting groups more comparable on background variables that might confound the relationship between voting and educational attainment; we do likewise for political party affiliation and trust of federal government.

In all three cases, no causal inference is possible, following the dictum “No causation without manipulation” (Holland, 1986, p. 959): because people could not be randomized within an experiment to vote, affiliate with a political party, or trust the federal government, no analysis can discover whether any of these three measures of civic engagement cause youth to have higher educational attainment. A randomized experiment could not assign participants to vote; instead, randomized experiment could use an encouragement design that randomly assigns the treatment arm to an intervention that increases the likelihood of participants choosing to vote relative to the control arm. An encouragement design is the type of randomized experiment used to evaluate the effects of the flu vaccine (Hirano, Imbens, Rubin, & Zhou, 2000) or breastfeeding (Yang et al., 2018.) The results from this study using a propensity matching method indicate whether voting, party affiliation, and trusting the federal government are unconfounded markers for college completion. Similarly, propensity matching analysis to evaluate the association between virginity pledges and sexual behaviors could conclude whether virginity pledges were a marker for these sexual behaviors, rather than a clear causal relationship (Rosenbaum, 2009).

Propensity matching method.—The propensity matching model used the MatchIt library in the statistics software package R (Ho, Imai, King, & Stuart, 2018). A propensity matching model was created for each of the three measures of civic participation that were significantly associated with college graduation in the multivariate regression models. The first propensity matching model identified community college students who did not vote in the 2000 presidential election who were most similar to students who voted in the 2000 presidential elections. The second propensity matching model identified community college students not affiliated with a political party who were most similar to students affiliated with a political party. The third propensity matching model identified community college students

who did not trust the federal government most similar to students who do trust the federal government.

We identified the variables to use for the propensity matching method were identified using bivariate analysis to compare students who voted in the 2000 election with students who did not vote in the 2000 section (Table 5). We chose the variables to use in the bivariate analysis from earlier work on adolescent civic engagement (Duke et al., 2009). The propensity matching model aims to identify the non-voters most similar to voters; for the propensity matching model, we included all variables that were associated with voting in the 2000 election in bivariate analysis with $p < 0.1$. For voting, the propensity matching model used exact matching on expectations of college attendance (measured in 1995) and Mahalanobis matching on age on the day of the 2000 presidential election, within propensity score calipers. The estimated propensity score used for the propensity score calipers was based on demographic variables (male, African-American, Asian), educational variables (test score percentile, school attachment problems, parent's high school graduation status), and contextual variables (live in rural area, lived in same state since 1995, and parent's community involvement).

For political party affiliation, the propensity matching model used exact matching on expectations of college attendance (measured in 1995) and Mahalanobis matching on closeness to parent, within propensity score calipers. The estimated propensity score used for the propensity score calipers was based on demographic variables (African-American, Asian), educational variables (parent expects child to attend college, grade point average, problems completing homework weekly, having ever repeated a grade in school, test score), and contextual variables (lived in since 1995, less than one year in state at the time of the 2000 elections, neighborhood quality, and experiences with violence).

For trust of the federal government, the propensity matching model used exact matching on expectations of college attendance and Mahalanobis matching on closeness to parent, within propensity score calipers. The estimated propensity score used for the propensity score calipers was based on demographic and family variables (African-American, Asian, speak English at home, live with both parents, closeness with parents), educational variables (school attachment problems, gap of at least one year between high school and college (measured in 2001), problems getting along with teachers weekly, problems paying attention in school weekly, absenteeism exceeding 10 days, peer ties at school, standardized test score), and contextual variables (neighborhood quality, experiences with violence).

Multivariate Analysis after Propensity Matching Method

After each propensity matching method achieved balance on the potential confounding variables, we repeated the multivariate regression analyses within the matched samples. The multivariate regressions used a Poisson working model to predict each level of educational attainment, controlling for demographics (gender, Latino/Asian/African-American race/ethnicity, age in 2008), educational variables (grade point average, test score), expectations (college attendance intentions, positive expectancies index), parent background (educational level, nativity, enough money to pay bills, household income, speak English at home), college enrollment variables measured in 2001 (gap of at least a year between high school

graduation and college enrollment, attend college full-time, age of high school graduation). These latter multivariate analyses are considered to be the best measures of association because the earlier multivariate analyses are potentially confounded by pre-college variables. We report these measures of association before and after matching, so that the reader can compare them, following the example of a classic paper (Stukel et al., 2007).

Results

Bivariate Analysis

Most of these community college students (72.4%) were registered to vote, and 45% had voted in the 2000 presidential election (Table 3). Few respondents had attended a rally, donated to a candidate, or written to an office holder. Having voted in the 2000 presidential election was associated with higher educational attainment in 2008: 40% of community college students who had not completed any post-secondary degree by 2008 voted in the 2000 election, compared with 46% who had finished either a certificate or AA by 2008, and 54% who had completed a BA or above by 2008 ($p < .0001$).

About a third (32%) of these community college students affiliated with a political party: 11% Republican, 19% Democrat, and 2% a third party. Students affiliated with a political party affiliation in 2001 had greater educational attainment in 2008 ($p < 0.01$). The proportion of community college students who affiliated with any political party in 2000 differed by 12 percentage points between community college students who had attained a BA or above in 2008 and those who had not earned any post-secondary credential. Republican party affiliation in the year 2000 was almost twice as common among students who had finished a BA or above in 2008 as among those who had not completed any post-secondary credential.

Over 40% of these community college students reported trusting the federal (42%), state (46%), and local (47%) governments. Trust in federal, state, and local government in 2001 was associated with greater educational attainment in 2008 ($p < 0.01$ federal and state; $p < 0.05$ local): the proportion who trusted government differed by 10 percentage points between community college students who had attained a BA or above by 2008 and those who had not earned any post-secondary credential by 2008. Less than 20% of these community college students reported distrusting federal (19.5%), state (16.9%), and local (16.5%) governments. Distrust of local government in 2001 was associated with lower educational attainment in 2008 ($p < 0.05$), but distrust of federal and state government were not associated with educational attainment at the 0.05 level.

Volunteerism was common among these community college students, both as teenagers and in the past year: 49% had volunteered as teenagers; 30% had volunteered in the past year; 33% were registered organ donors; and 19% had donated blood in the past year. Students who volunteered — either as teenagers or in the past year — did not have greater educational attainment in 2008. Half (52%) of respondents described themselves as politically moderate, 21% as politically conservative, and 18% as politically liberal. Political beliefs were not associated with greater educational attainment.

Multivariate Analysis Before Propensity Matching

We conducted multivariate analyses to test whether variables that were significant in bivariate analysis were still significant after controlling for background variables, such as pre-college socioeconomic status and grades (Table 4). In multivariate analysis, community college students who voted in the 2000 election were 12% more likely to earn a post-secondary credential (certificate or above) by 2008 (IRR=1.12, 95% CI [1.03, 1.22]), 16% more likely to earn an AA or above (IRR=1.16, 95% CI [1.04, 1.30]), and 38% more likely to earn a BA or above (IRR=1.38, 95% CI [1.10, 1.73]).

Community college students who reported affiliating with a political party were 13% more likely to earn a post-secondary degree (IRR=1.13, 95% CI [1.04, 1.24]), 17% more likely to earn an AA or above (IRR=1.17, 95% CI [1.04, 1.31]), and 42% more likely to earn a BA or above (IRR=1.42, 95% CI [1.14, 1.77]). Community college students who affiliated with the Republican Party were 14% more likely to earn a post-secondary credential by 2008 (IRR=1.14, 95% CI [1.02, 1.28]) and 34% more likely to earn a BA or above (IRR=1.34, 95% CI [1.00, 1.79]).

Community college students who reported trusting the federal government were 10% more likely to earn a post-secondary credential by 2008 (IRR=1.10, 95% CI [1.00, 1.20]), 16% more likely to earn an AA or above (IRR=1.16, 95% CI [1.04, 1.30]), and 26% more likely to earn a BA or above (IRR=1.26, 95% CI [1.01, 1.57]). Trust in state and local governments, and distrust of any branch of government, were only inconsistently and marginally associated with earning post-secondary degrees (Table 4).

These multivariate analyses identified three variables that seem to be most associated with educational attainment in this sample of community college students: voting in the 2000 presidential election, affiliating with a political party, and trusting the federal government. These three types of civic engagement are associated with greater likelihood of graduation seven years later, and the estimated relative risks are higher for higher educational levels. We focus on these types of civic engagement in the propensity matching analyses.

Association Between Voting in the 2000 Presidential Election and Community College Completion

Community college students of voting age who voted in the 2000 presidential election did not differ from non-voters in most characteristics (Table 5). Baseline variables (measured in 1995) associated with greater likelihood of voting in the 2000 election included older age (0.2 years on average), having parents that belonged to organizations (52% versus 44%), having parents who graduated high school (83% vs. 79%), expecting to definitely go to college (62% vs. 53%), college motivation (80% vs. 72%), Black race (26% vs. 20%), higher vocabulary score percentile (78 vs. 76 percentile), having fewer school attachment problems (rated 48 versus 49 out of 100), and living in the same state for a larger number of years (10 years vs. 9 years). Baseline variables associated with lower likelihood of voting in the 2000 presidential election included living in the same state in 2000 as 1995 (39% vs. 44%), Asian identity (4% vs. 8%), rural residence (24% vs. 30%), male gender (38% vs. 43%), and delaying college matriculation for more than a year after high school graduation

(52% vs. 57%). Voters didn't differ in how close they are to their parents, decision autonomy, living with both biological parents, GPA, truancy, absence, grade repeating, problems at school, nativity, Latino ethnicity, urban or suburban location, neighborhood quality, violent experiences, full-time college attendance, age at high school graduation, and length of continuous residence at their current address; parents of voters parents didn't differ from parents of non-voters in college graduation status, household income, nativity, having enough money to pay bills, speaking English at home, receiving public assistance, or expectations for their child's college attendance.

Propensity matching is a statistical method to minimize confounding: that is, the possibility that correlated third variables might account for association between our civic engagement variables and education attainment observed above. Unlike multivariate regression, propensity matching is non-parametric and relies on few assumptions, so in most cases it can minimize confounding more than multivariate regression (Morgan & Winship, 2015). In our sample, propensity matching successfully identified non-voters similar to the voters. After propensity matching, the above differences between voters and non-voters were no longer significant (Figure 1.) After propensity matching, the multivariate regression showed that voting is not associated with community college certificates or associates' degrees, but voters in the 2000 presidential election were 35% more likely to attain a BA (IRR=1.35, 95% CI [1.01, 1.82]) (Table 4.)

Association Between Political Party Affiliation and Community College Completion

Baseline variables (measured in 1995) associated with greater likelihood of affiliating with a political party in 2000 included greater closeness with parents, parents with higher college expectations, had higher college expectations and motivation to attend, higher test scores, lower grades, trouble completing homework at least once per week, Black race, worse neighborhood quality, more violent experiences, living in their current state for less than a year at the time of the 2000 election, and less likely to have lived continuously in their state for the past 5 years (Table 5). Baseline variables associated with lower likelihood of political party affiliation included having repeated a grade and Asian race.

Propensity matching successfully identified community college students who were not affiliated with a political party who were similar to those who affiliated with a political party (Figure 2.) After propensity matching, the earlier identified differences — between students affiliated with a political party and students not affiliated with a political party — were no longer significant. After propensity matching, the multivariate regression showed that community college students affiliated with a political party were 27% more likely to attain an AA or above (IRR=1.27, 95% CI [1.07, 1.51]) and 49% more likely to attain a BA or above (IRR=1.49, 95% CI [1.06, 2.08]), although there was no difference for a certificate or above (Table 4.)

Association Between Trusting the Federal Government and Community College Completion

Baseline variables associated with greater likelihood of trusting the federal government in 2000 included Asian race, closeness with parents, living with both biological parents, greater

college expectations, feeling close to people at school, lower likelihood of weekly problems paying attention at school and with teachers, absent more than 10 days, to delay in college matriculation of at least a year between high school graduation and college enrollment, lower vocabulary test scores, more school attachment problems, greater neighborhood quality, and fewer violent experiences, (Table 5). Variables associated with not trusting the federal government included Black race and speaking English at home.

Propensity matching successfully identified respondents who did not trust the federal government who were similar to those who did trust the federal government (Figure 3.) After matching, the earlier identified differences between students who trusted the federal government and students who did not trust the federal government were no longer significant. After propensity matching, the multivariate regression found that respondents who trusted the federal government were 14% more likely to earn a certificate or above (IRR=1.14, 95% CI [1.01, 1.29]), 19% more likely to earn an AA or above (IRR=1.19, 95% CI [1.02, 1.40]), and 46% more likely to earn a BA or above (IRR=1.46, 95% CI [1.07, 1.97]) (Table 4.)

Discussion

Civic engagement is crucial for the future of democracy in the United States and an intrinsic good (Bok, 2001). Community colleges have various programs to increase their students' civic engagement; this paper suggests that these civic engagement programs may also improve students' educational attainments. Community college students are disproportionately disadvantaged, and have much at stake from the U.S. political system, which considers policies that may further disadvantaging them. Community colleges can play a non-partisan role in improving students' engagement with their society. Community college students do not fit stereotypes that young adults are primarily affiliated with the Democratic Party: only 19% of two-year college students affiliated with the Democratic Party, versus 11% of two-year college students who affiliated with the Republican Party. These results suggest that encouraging community college students to increase civic engagement should not be perceived as partisan.

Two-year college students with greater civic engagement during college had higher educational attainment seven years later, even after statistical matching that minimized confounding by pre-college grades, socioeconomic status, and other variables. Two-year college students who trusted the federal government during college were more likely to attain certificates, AAs, and BAs in 2008. Two-year college students who affiliated with a political party during college were more likely to attain AAs and BAs. Two-year college students who voted in the most recent presidential election were more likely to attain BAs. It is particularly remarkable that these three types of civic engagement were associated with more than 35% greater likelihood of attaining a BA, and two types of civic engagement were associated with almost 50% greater likelihood of a BA.

Some researchers suggest that the type of post-secondary institution drives civic engagement, with greater civic engagement among residential four-year college students than non-residential four-year college students (Evans, Marsicano, & Lennartz, 2019).

Unlike that study which did not use matching or long-term follow-up, this research finds civic engagement precedes educational attainment among two-year college students, and is associated with educational attainment even after matching on pre-college grades, socioeconomic status, and other variables, reducing the likelihood that selection bias explains this finding, as can happen in studies that don't use matching.

Civic Engagement Supplementing Social Integration in Tinto's Model

Tinto's model of student retention posits that academic and social integration are key factors in college persistence (Tinto, 1975). Community colleges lack the usual social outlets present at four-year colleges, so it is unclear how to apply Tinto's concept of social integration within the community college context. This paper suggests that integration in the civic context — as indicated by voting, political party affiliation, and trusting the federal government — is associated with college retention, despite the paucity of social activities at community colleges.

Students may also use civic context to provide a social context in their lives. Among community college students, variables measured during middle or high school that were associated with greater likelihood of affiliating with a political party in 2001 were variables that generally indicate more disadvantage and lower civic engagement (Diemer & Li, 2011): poor functioning at school (not feeling close to people at school, more problems with homework, and lower grade point averages), a lack of neighborhood capital (worse neighborhood quality, more experiences of violence), and lower social capital during college (had lived in their state for less than one year at the 2000 election).

Students who trust the federal government may be more likely to trust the establishment and trust that college degrees can help them to achieve good outcomes. Students need self-efficacy not just to finish their degree, but students need self-efficacy to believe that their degrees can affect their lives. This result is consistent with past research that found that students who feel socially or politically empowered have better educational outcomes (Diemer & Li, 2011). African-American students were much less likely to trust the federal government, and that lack of trust in the federal government may not imply lack of civic engagement, given structural racism, including official government policies with adverse effects on African-Americans.

Many students from disadvantaged backgrounds attend two-year colleges, and these students may have many reasons to distrust government, due to adverse experiences with the government or the absence of government intervention in the face of adverse experiences, including racist government policies. However, students who distrust government have only marginally lower educational attainment. Distrust may not hurt students as much as the absence of trust. In order to finish community college in the face of large personal and academic challenges, students may benefit from positive beliefs that they will be able to use their degree to attain a good job and that their degree can make a difference for society. Students who feel part of a larger civic polity may see a greater need to finish their degrees.

Civic participation may be even more important for two-year college students than for students at four-year colleges, especially residential colleges, because two-year college

students generally live outside their college campuses. In most two-year colleges, students commute to college and have social contexts outside of the college community, so social integration may play a different role for two-year college students than it does for four-year college students. For two-year college students, civic integration may augment their social integration at college, and compensate somewhat for lacking the opportunities available to students at four-year institutions.

As with Astin and Sax's (1998) work in four-year colleges, this research suggests that political activities may enhance academic outcomes, but contrary to their work, it finds greater effects from political involvement, and little or no effect from volunteerism. This difference may be attributable to the two studies using different measures of volunteerism. The measure of volunteerism in this study cannot distinguish between casual (e.g., once per year) and extensive (e.g., once per week) involvement in volunteering, and this measurement error may bias results to the null because casual volunteerism may not be sufficient to increase educational attainment.

Policy Implications

Voting, political party affiliation, and trusting the government are associated with higher educational attainment among two-year college students. Two-year colleges that have civic engagement programs should continue them, and two-year colleges without such programs could benefit from developing programs or encouraging outside non-partisan groups to register students to vote and become politically aware. While seemingly irrelevant to the purpose of career-oriented two-year colleges, college students who feel empowered as part of a larger polity may engage more with their schoolwork and may be more likely to persist to a degree, similar to the finding in four-year college students with respect to community service (Astin & Sax, 1998).

This study also implies that federal policies that increase students' trust in government could improve completion rates, perhaps by increasing students' beliefs that their degrees will help them. When government engages in adverse actions or fails to act to reduce citizens' adverse experiences, students may feel that the system is rigged against them, and may not have self-efficacy that their degree can improve their lives. Budget reductions that demoralize two-year college students may reduce completion rates due to that demoralization, not just through the direct effects of budget cuts.

Strengths and Limitations

The long-term nature of the study meant that temporal ordering of events was clear: the control variables preceded the measure of civic engagement by at least five years, and educational outcomes were measured 7–8 years after civic engagement. The matching procedure minimized confounding on many observed pre-college variables, including household income, grade point average, and test scores, although confounding on unobserved or unmatched variables could have remained. Matching more accurately estimates treatment effects, but the method is not intended to permit inferences about representativeness. However, the sample was diverse and recruited from 128 middle and

high schools around the United States, with an oversample of Black students, students with disabilities, and students with a college-educated Black parent.

The Add Health study, like all long-term studies, is about a prior cohort of two-year college students, and the findings may not apply to current two-year college students; however, no comparable study exists with both civic engagement measures and educational outcomes from two-year college students from a nationally representative study.

Studies with multiple statistical analyses may yield false significance due to multiple comparisons because an average of 5% of analyses conducted at $\alpha=0.05$ falsely reject the null hypotheses. We identified civic engagement measures associated with all three educational attainments, greatly reducing the chance of false significance. Further, we only estimated treatment effects once after matching, so that analyses could not be cherry-picked for significance (Rubin, 1973, 1974, 2006).

Conclusions

Civic participation by all Americans is important for the preservation of American democracy, but disadvantaged Americans have lower civic participation. Young adults from disadvantaged backgrounds access higher education through two-year colleges, and two-year colleges have the opportunity to encourage civic participation of their students, which is intrinsically a civic virtue that is good for democracy. This study shows that encouraging civic engagement - including voting, affiliating with a political party, and trusting the federal government - may have beneficial side-effects of improving students' educational attainments.

Researchers including Tinto have speculated whether Tinto's model of college persistence applies to two-year college students due to the paucity of organized campus social activities (Bailey & Alfonso, 2005; Tinto, 1993). This research suggests that for two-year college students, civic engagement may supplement social engagement. Two-year college students who vote, affiliate with a political party, and trust the government have higher educational attainment. Two-year colleges that encourage voter registration and political activities on their campuses may increase student engagement with both society and their studies, and increase educational attainment. Engagement with political and governmental institutions may increase two-year college students' trust that college degrees can help them to improve their lives and society.

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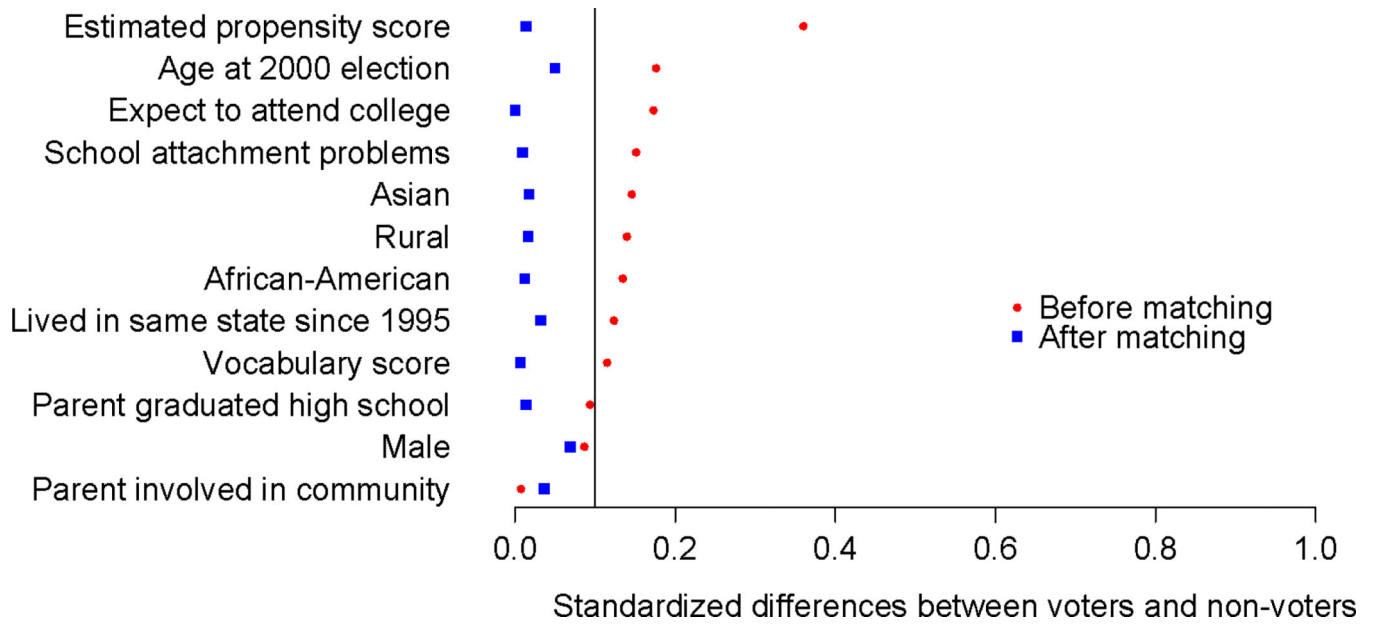


Figure 1. Standardized differences between voters in 2000 presidential election and non-voters, before and after matching.

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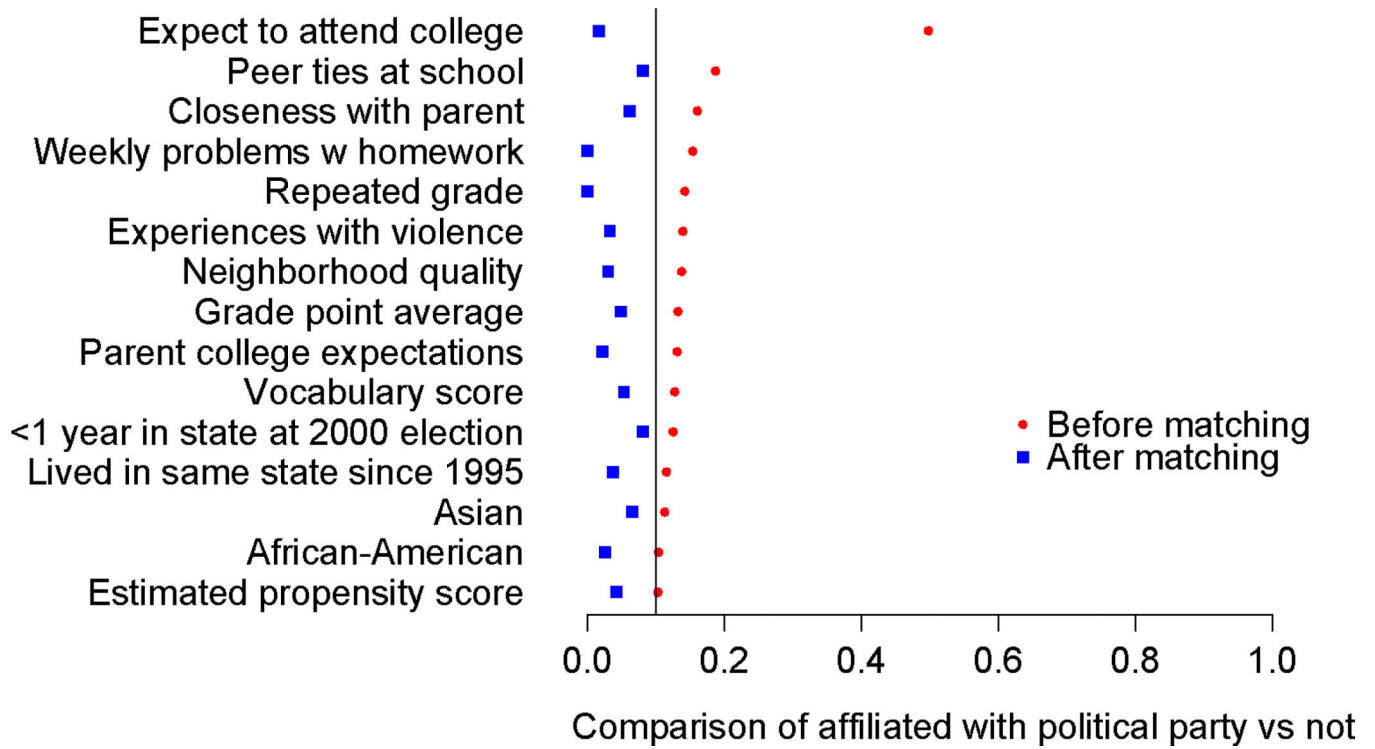


Figure 2. Standardized differences between those affiliated with political party versus not, before and after matching.

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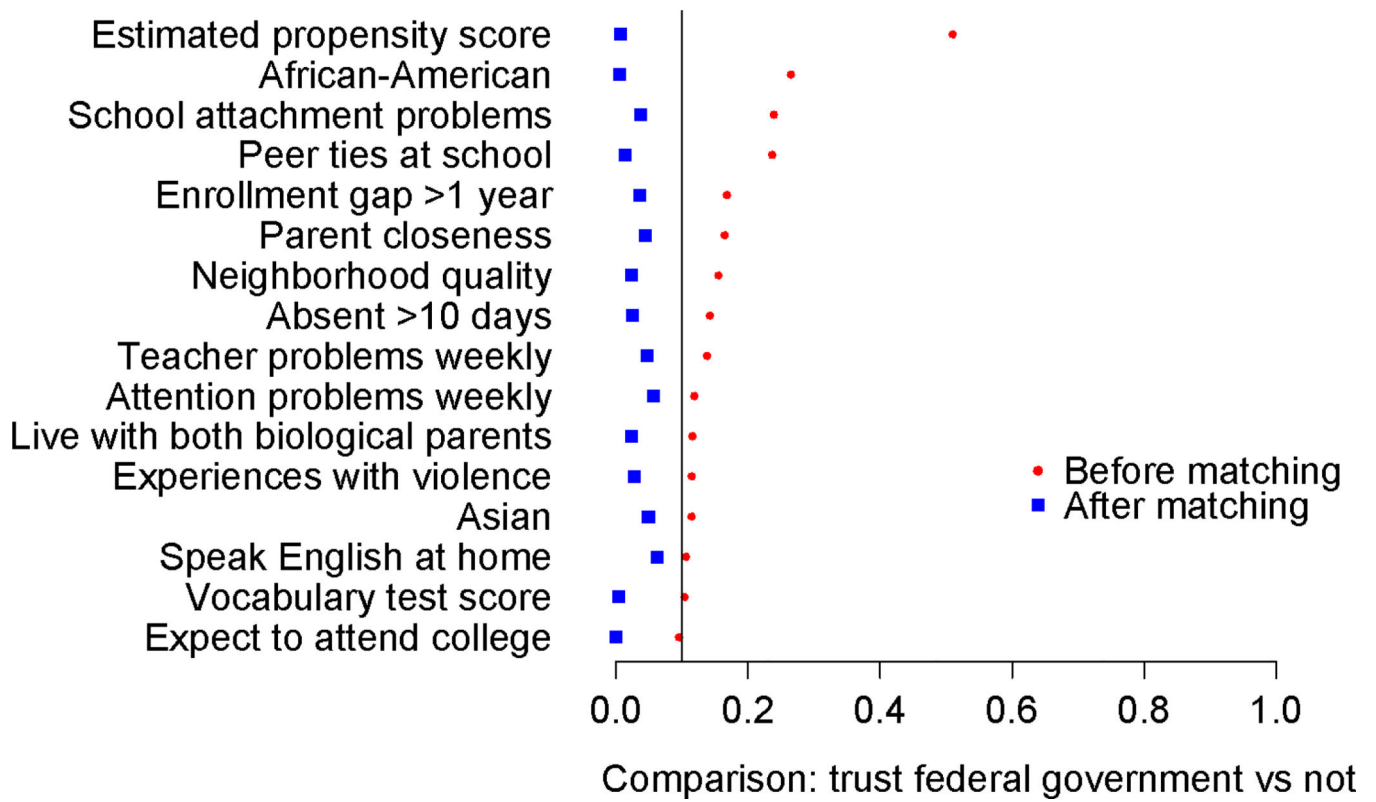


Figure 3. Standardized differences between students who trusted the federal government versus not, before and after matching.

Table 1

Civic Engagement Items On the Add Health Survey, Measured in 2001

Question	Possible answers
Political participation	
Are you registered to vote?	Yes/no
Did you vote in the most recent presidential election?	Yes/no
Which of the following things have you done during the last 12 months?	Marked/not marked
... contributed money to a political party or candidate	
... contacted a government official regarding political or community issues	
... attended a political rally or march	
... filed a tax return	
Trust and distrust of government	
How much do you agree or disagree with each of the following statements?	Likert scale
... I trust the federal government.	
... I trust my state government.	
... I trust my local government.	
Political affiliation	
In terms of politics, do you consider yourself conservative, liberal, or middle-of-the-road?	Likert scale
Do you identify with a specific political party?	Yes/no. Democrat (sic.), Republican, Libertarian, Green, Reform, Socialist, Independent, Other
With which party do you identify?	
Volunteerism	
At any time during your adolescence, when you were between 12 to 18 years old did you regularly participate in volunteer or community service work?	Yes/no.
Don't count things like washing cars or selling candy to raise money.	
Was this work...	Marked/not marked
... strictly voluntary (that is, you did it only because you wanted to),	
... or was it ordered by a court as part of a sentence	
... or required by your parents, school, or religious group?	
During the last 12 months did you perform any unpaid volunteer or community service work?	Yes/no
Have you donated blood, plasma, or platelets during the last 12 months?	Yes/no
Are you a registered organ donor?	Yes/no

Table 2

Question	Scale
Demographics, home context	
Gender, Black race, Asian race, Hispanic ethnicity	binary
Born in the United States	binary
Age on the date of the 2000 presidential election	Years
Moved to US before age 6; before age 11.	binary
Parents born in the US	binary
Speak English at home	binary
Rural, suburban, urban residence	binary
Live with both biological parents	binary
Parent participates in any of the following: parent-teacher organization, labor union, military veterans organization, hobby/sports group, civic/social organization	binary
Socioeconomic status	
Parents have enough money to pay bills (parent-reported)	binary
Parent receives public assistance (parent-reported)	binary
Parent educational attainment (parent-reported): graduated high school, college, missing.	binary
Household income (parent-reported)	Log dollars
Neighborhood quality: know most residents, talk to others in past month, look out for each other feel safe, happy, happy/unhappy to move.	Sum of 7 items (alpha=0.60)
Experiences with violence: saw shooting, knife/gun pulled, shot, stabbed, jumped, fight, pulled knife/gun, shot/stabbed another.	Sum of 8 items (alpha=0.72)
Home context	
Lived continuously in the same state since 1995	binary
Lived in the same place always	binary
Lived in state less than 1 year at the time of the 2000 election	binary
Decision autonomy: make own decisions about curfew, friends, clothes, TV time, TV programs, bed time, food.	Sum of 7 items (alpha=0.71)
Closeness with mother and/or father: e.g., closeness, perceived love and warmth, perceived caring, satisfaction with relationship, family understands and gives attention, have fun with family.	Sum of 14 items (alpha =0.81)
Positive expectancies: want, will go to college, will live to age 35, not killed by age 21, won't get HIV	Sum of 5 items (alpha=0.61)
Potential educational effect modifiers (measured in 2001)	
Attend college full time	binary
College matriculation 1 year after high school graduation	binary
School attachment	binary

Question	Scale
Problems with school attachment: Get along with teachers, pay attention, complete homework, get along with students, feel close to people, feel part of school, happy to be at school, teachers fair, feel safe.	Sum of 9 items (alpha=0.91)
Problems getting along with teachers	binary
Problems paying attention in school	binary
Problems completing homework	binary
Problems getting along with other students	binary
You feel close to people at your school.	Likert
Absent more than 10 days with an excuse during the school year.	binary
Ever repeated a grade or been held back a grade	binary
Definitely will attend college	binary
Definitely want to attend college (omitted in multivariate models due to colinearity)	binary
Parent expects child to attend college (parent-reported), missing.	binary
Grade point average: English, math, history, science.	A = 4.0, sum of 4 items (alpha=0.72)
Standardized test score (Peabody vocabulary test percentile)	0-100
Age at high school graduation	Years
Number of truant days	Number

Note: Potential confounders between civic engagement and educational attainment. All potential confounders were measured in 1995 unless otherwise noted. All aggregate variables (sum of multiple items) are normalized to a scale from 0 to 100. If a variable is defined by multiple dummy variables, that is indicated. Factor variables include Cronbach's alpha.

Table 3
Civic Engagement by Two-Year College Students Measured in 2001, by Educational Attainment in 2008

Measure	Percent endorsing (%)					P-value
	All (n=1212)	High school diploma (n=471)	Certificate (n=162)	Associates degree (n=336)	BA or above (n=243)	
Voted in 2000 presidential election	45.1	40.0	46.0	46.1	53.5	****
Affiliate with political party	32.1	28.1	32.2	31.9	40.3	**
Affiliate with Republican party	11.0	8.1	11.5	11.9	15.1	**
Registered to vote	72.4	71.0	74.1	70.6	76.7	
Affiliate with Democratic party	19.3	19.0	19.5	16.1	24.4	
Attended rally in past year	2.5	2.3	2.9	1.7	3.9	
Contacted elected official in past year	2.3	2.5	1.7	1.9	2.7	
Contributed money to an election	1.5	1.2	1.2	1.9	1.9	
Affiliate with third party	1.8	1.0	1.2	3.9	0.8	
Political trust						
Trust federal government	42.2	38.3	39.7	44.7	48.1	**
Trust state government	46.4	42.9	43.1	48.9	51.9	**
Trust local government	47.1	43.7	45.4	48.9	52.3	*
Distrust federal government	19.5	21.7	18.4	18.6	17.1	+
Distrust state government	16.9	19.6	16.1	15.8	15.5	
Distrust local government	16.5	19.2	13.2	16.9	12.8	*
Volunteerism						
Volunteered as teen	49.0	49.9	44.8	47.5	51.9	
Volunteered as teen, by choice	40.4	41.2	40.2	38.6	41.5	
Volunteered as teen, requirement	11.1	11.4	6.3	11.7	12.8	
Volunteered last year	30.0	29.2	23.0	31.9	33.3	
Donated blood last year	19.3	19.3	16.1	20.6	19.4	
Organ donor	32.6	32.3	34.5	34.2	29.8	

Note: P gives the significance of the Cuzick's test for trend, which evaluates whether the frequency of the trait is proportional to educational level. The sample is limited to 2-year college students without a post-secondary degree who were eligible to vote in the 2000 presidential election according to their reported citizenship and age.

+ p 0.1,

* p 0.05,

.10000
P

P
0.001

P
0.01

P

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Multivariate Model: Prediction of Educational Attainment in 2008 from Civic Engagement Characteristics of Two-Year College Students in 2001

Table 4

Measure	% Voted in 2000 election	Certificate or above				Associates or above				BA or above			
		IRR	95% CI	P	IRR	95% CI	P	IRR	95% CI	P	IRR	95% CI	P
Before matching	45.1	1.12	[1.03, 1.22]	**	1.16	[1.04, 1.30]	**	1.38	[1.10, 1.73]	**			
After matching		1.04	[0.93, 1.16]		1.13	[0.96, 1.32]		1.35	[1.01, 1.82]	*			
Affiliate with political party	32.1												
Before matching		1.13	[1.04, 1.24]	**	1.17	[1.04, 1.31]	**	1.42	[1.14, 1.77]	**			
After matching		1.10	[0.97, 1.25]		1.27	[1.07, 1.51]	**	1.49	[1.06, 2.08]	*			
Trust federal government	42.2												
Before matching		1.10	[1.00, 1.20]	*	1.16	[1.04, 1.30]	**	1.26	[1.01, 1.57]	*			
After matching		1.14	[1.01, 1.29]	*	1.19	[1.02, 1.40]	*	1.46	[1.07, 1.97]	*			
Affiliate with Republican party	11.0	1.14	[1.02, 1.28]	*	1.13	[0.98, 1.30]	+	1.34	[1.00, 1.79]	*			
Trust state government	46.4	1.07	[0.98, 1.16]		1.12	[1.00, 1.26]	*	1.22	[0.98, 1.53]	+			
Distrust federal government	19.5	0.90	[0.80, 1.01]	+	0.87	[0.75, 1.01]	+	0.80	[0.59, 1.09]				
Distrust local government	16.5	0.89	[0.78, 1.01]	+	0.92	[0.78, 1.09]		0.70	[0.49, 1.00]	*			
Distrust state government	16.9	0.94	[0.83, 1.07]		0.94	[0.80, 1.10]		0.91	[0.67, 1.24]				
Trust local government	47.1	1.05	[0.96, 1.15]		1.07	[0.95, 1.19]		1.18	[0.95, 1.48]				

Note: Each entry is the coefficient from a multivariate regression (control variables are listed below). For three civic engagement characteristics — voting, political party affiliation, and political trust — we included multivariate results before and after propensity matching. Propensity matching created a comparison group, so that voters were compared only with similar non-voters in the multivariate regression, and likewise for those affiliated with a political party (versus not), and those who trust the federal government (versus not). Control variables were demographics (gender, Latino/Asian/African-American race/ethnicity in 2008), educational variables (grade point average, test score), expectations (college attendance intentions, positive expectations index), parent background (educational level, nativity, enough money to pay bills, household income, speak English at home), college enrollment variables measured in 2001 (gap of at least a year between high school graduation and college enrollment, attend college full-time, age at high school graduation.)

Table 5

Comparison of Community College Students

	Voted in 2000		Affiliate w political party		Trust federal government				
	No (n=649)	Yes (n=588)	P	No (n=807)	Yes (n=405)	P	No (n=704)	Yes (n=508)	P
Parent-reported									
Membership in organizations	43.8	51.9	**	47.2	49.6		48.2	47.8	
Graduated high school	78.9	82.8	+	80.2	83.7		81.8	80.7	
Parent-child closeness	79.3	79.2		78.6	80.5	*	79.2	80.6	**
Parent expects college (100)	76.1	77.3		75.6	78.7	+	76.5	77.0	
Parent graduated college	17.6	15.1		16.0	18.0		16.1	17.5	
Parent education missing	11.9	12.4		11.9	11.6		12.5	10.8	
Household income (\$)	43,400	44,700		43,380	46,000		44,000	44,700	
Parent born in US	72.7	73.5		72.6	75.1		74.0	72.6	
Enough money for bills	70.9	72.8		72.1	72.6		71.9	74.0	
Receives public assistance	6.3	5.6		6.3	5.2		6.7	4.9	
Decision autonomy (100)	67.4	68.5		68.2	67.5		67.8	68.2	
Educational variables									
Definitely will go to college	52.9	61.6	**	55.0	61.7		55.1	60.2	+
Definitely want college	72.4	79.6	**	74.5	79.3	+	75.3	77.2	
Vocabulary test percentile	76.3	77.5	*	76.6	77.7	+	77.4	76.4	+
School attachment problems (100)	49.2	47.8	*	48.6	48.4		47.5	50.0	****
1 year college matriculation delay	56.5	51.6	+	56.5	52.6		58.7	50.4	**
Grade point average (4.0)	2.80	2.81		2.85	2.74		2.79	2.85	
Repeated grade	13.4	16.0		16.0	10.9	*	14.6	13.8	
Weekly problems with homework	27.9	26.7		25.4	31.1	*	28.6	25.6	
Feel close to people at school	69.0	65.1		68.8	64.0	+	62.4	73.8	****
Absent more than 10 d	13.7	12.4		13.4	11.6		14.9	9.8	**
Weekly problems with teachers	15.7	13.3		13.8	16.3		16.8	11.6	*
Weekly problems with attention	29.1	26.9		27.8	28.4		30.3	24.8	*
Age at high school graduation	18.3	18.3		18.3	18.2		18.3	18.3	
Attend college full-time	58.6	57.3		57.6	59.0		57.4	59.1	

	Voted in 2000			Affiliate w political party			Trust federal government		
	No (n=649)	Yes (n=588)	P	No (n=807)	Yes (n=405)	P	No (n=704)	Yes (n=508)	P
Demographics									
Asian	7.7	3.9	**	7.2	3.2	**	4.8	7.3	+
African-American	19.6	25.5	*	19.7	27.2	**	27.1	15.4	****
Lived in current state since 1995	44.1	38.6		43.9	37.0	*	42.9	39.8	
Age at 2000 election (years)	20.6	20.8	**	20.6	20.7		20.7	20.7	
Rural	29.7	23.8	**	28.0	25.4		26.9	27.6	
Male	42.5	37.9	+	40.4	40.0		39.9	40.8	
< 1 y in state at 2000 election	5.9	6.5		5.2	8.2	*	6.3	6.1	
Neighborhood quality (100)	67.1	68.5		68.5	66.1	*	66.4	69.5	
Violent experiences (100)	5.5	5.4		5.0	6.1	+	5.6	4.7	*
Live with both biological parents	55.6	53.6		54.8	55.8		52.7	58.5	*
Home language is English	89.4	90.3		89.5	90.9		91.2	88.2	+
Born US citizen	73.2	75.5		74.6	74.1		74.3	74.6	
Latino	19.4	17.9		18.3	19.3		18.8	18.5	
Urban	33.0	35.0		32.2	35.8		34.4	32.1	
Suburban	35.8	40.0		38.3	37.5		37.1	39.4	

Note: US citizens at least age 18 on the date of the election who voted in presidential election of 2000 versus not, affiliated with political party vs. not, and trust federal government versus not. If a trait is on a scale, the maximum on the scale is listed.

+ p 0.1,

* p 0.05,

** p 0.01,

*** p 0.001,

**** p 0.0001.