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The relationship between adolescents' civic knowledge, civic attitude, and civic behavior and their self-reported future likelihood of voting

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Abstract

A long-standing objective of American public education is fostering civically engaged youth. Identifying characteristics associated with likelihood of future voting, a measure of democratic participation that predicts future voting behavior, might yield targets for education programs to increase civic participation. Survey data from urban adolescents were analyzed to elucidate how civic knowledge, civic attitudes, and civic behaviors are associated with self-reported likelihood of future voting. In a multivariable ordered logistic regression model with latent constructs for civic knowledge, attitudes, and behavior, two civic knowledge constructs and two civic attitude constructs maintained a positive, statistically significant independent association with future voting likelihood after adjusting for race/ethnicity and advanced coursework: knowledge of American governance, current events knowledge, general self-efficacy, and skill-specific self-efficacy. Further research is necessary to determine whether education programs can intervene upon these civic knowledge and civic attitude factors to increase voting participation later in life.

Keywords

adolescents; civic engagement; civic education; civic skills; self-efficacy; voting

1. Introduction

1.a. Civic engagement and education

A historic purpose of public schools is to prepare youth to be future democratic citizens (Lewis, 1914). Competent and responsible citizens are informed, participate in their communities, and have the knowledge, skills, and motivation necessary for acting politically and achieving public goals (CCNY and CIRCLE, 2003). People can engage as citizens in numerous arenas, from blogging and boycotting, to participating in civic organizations and mobilizing others, to voting and running for political office. One of the most fundamental processes to American democracy and democratic societies worldwide is voting. People's likelihood of voting is determined by their ability to vote, their motivation to vote, and the ease with which information about candidates and voting locations can be accessed (Harder and Krosnick, 2008). Economists argue that the effort required to vote versus the likelihood of changing an election does not incentivize voting; however, people do not necessarily hew

to a strictly rational choice model (Feddersen, 2004). Given that economic theory alone fails to describe why people choose to vote, it is important to consider social and educational determinants.

Not all citizens participate in the electoral process at equal levels; a civic engagement gap exists such that historically marginalized groups are less likely to be civically engaged (Levinson, 2010). While researchers have struggled to predict voter turnout (Matsusaka and Palda, 1999), myriad social factors are known to be associated with voter turnout, including race/ethnicity and socioeconomic status (Abramson and Claggett, 1986; File and Crissey, 2010; Shields and Goidel, 1997). Education and age are also associated with voting (Leighley and Nagler, 1992).

These differences may exist in part due to civic knowledge, skills, and motivation (Levinson, 2007). Polls and surveys conducted by news media, think tanks, and academics have measured and described Americans' limited civic knowledge (e.g., Lane and Barnette, 2011). Data from K-12 students and adults has consistently shown that Whites and Asians and people from middle-class families have higher civic content knowledge and civic skills than Blacks and Hispanics and those from poorer families (Delli Carpini and Keeter, 1996). Low-income people are less likely to participate in campaign activities, contact public officials, be affiliated with a political organization, or engage in informal community activity (Verba et al, 1995).

Since all youth have access to public school, coursework is one place where civic knowledge and skills could be developed. For example, civics education may have a role in helping prepare future engaged citizens (Kahne et al, 2006). Social studies education can provide applied civic experiences and opportunities for students to engage with their communities (Kahne and Sporte, 2008; Kinloch, 2009; Shumer, 1997), which can lead to improved academic performance (Ives and Oberchain, 2006; Scales et al, 2006) and increased participation in their school and community (Farmer et al, 2007; Koliba, 2000; Toole, 2001). However, white students and students from high socioeconomic status backgrounds are more likely to receive civics education that builds their civic knowledge and skills than students of color and students from low socioeconomic status backgrounds (Kahne and Middaugh, 2008; Verba et al, 1995).

Evidence suggests civic engagement is a behavior and mindset gained in adolescence (Obradovic and Masten, 2007). Therefore, disparities that exist in current and future civic engagement among adolescents are of particular interest, since there are still opportunities for school-based intervention. In this context, this analysis explores the association of select civic factors and the self-reported likelihood of future voting among a sample of urban public school students.

1.b. Factors that affect civic engagement

Our explanatory variables of interest considered fell into five broad categories: academics, demographics (individual- and school-level), civic knowledge, civic attitudes, and civic behaviors, all of which we hypothesize influence civic engagement. We propose that multiple types of civic knowledge are important for civic engagement. First, traditional civic

content knowledge of processes and institutions, including knowledge of the roles of different elected offices, has been found, theoretically and empirically, to affect voter turnout (Popkin and Dimock, 1999). We also consider current events knowledge; historically, Tocqueville (1835) hypothesized newspaper readership and participation in public association to be correlated, and in an ecological study, both followed similar declining trajectories in recent years (Levine, 2011). Current events knowledge also has been linked to increased political knowledge and increased civic understanding (Galston, 2001, 2007), and exposure to newspapers is associated with political participation with larger effects seen when coupled with political discussions (Scheufele, 2002). Therefore, it is plausible to hypothesize that current events knowledge will be associated with voting. Our third civic knowledge construct is local political knowledge; knowing who is currently in office is also relevant for voter engagement in an election (Popkin and Dimock, 1999). For civic attitudes, we create separate constructs for general and skill-specific perceived self-efficacy. While other researchers (e.g., Beaumont, 2010) have analyzed the relationship between general self-efficacy and civic engagement, our skill-specific self-efficacy measure, which measures perceived self-efficacy regarding specific civic skills like persuasive speaking, is new. Similarly, for civic behaviors, we consider prior general and skill-specific civic experiences. General civic experiences like volunteering are often considered, but others have argued that this is only one component of civic engagement (Westheimer and Kahne, 2004), and so we present a more novel lens for civic behaviors that includes skill-specific measures in addition.

Other academic and demographic measures were also considered as covariates. For example, grades (e.g., grade point average) have been used by others as a measure of academic achievement and have been found to have a small but significant impact on voter turnout (Plutzer, 2002). Unexcused absences from school are a measure of academic engagement and have implications for academic achievement (Gottfried, 2009). Race/ethnicity is associated with voting both as a comparison of multiple ethnic groups (File and Crissey, 2010; Leighley and Vedlitz, 1999) and when treated as a white/non-white binary variable (Filer et al, 1991). Gender is often included as a covariate in analyses of voter turnout but has had inconsistent effects in the research (Timpone, 1998). Religious affiliation explains (Campbell, 2004) and predicts (Smith, 1999) political engagement. Low-income people are less likely to vote (Rosenstone, 1982); since we did not have individual-level socioeconomic status data, we considered percent of students at the school who receive free or reduced price lunch as a proxy of area-level socioeconomic status. We also took advantage of school-level data collected under the No Child Left Behind Act of 2001, including the percent of students who are of limited English proficiency and if the school is achieving adequate yearly progress. Minorities (Artiles et al, 2005) and immigrants (Fix and Passel, 2003) comprise a larger share of those classified as of limited English proficiency, and both race/ethnicity (Leighley and Vedlitz, 1999) and immigrant status (DiSipio, 1996; Ramakrishnan and Espenshade, 2001) are associated with likelihood of voting. While adequate yearly progress may serve as a measure of school quality, it is worth noting that under-resourced schools and majority-minority schools are less likely to meet adequate yearly progress (Kim and Sunderman, 2005).

The goal of this study was to determine whether civic knowledge, civic attitudes, and civic behaviors are associated with future civic engagement among adolescents, as measured by self-reported likelihood of future voting. We hypothesize that in this cross-sectional survey of urban youth, these civic constructs are each independently associated with future voting, adjusted for demographic and academic factors. Studies of the likelihood of voting tend to be done with registered voters, and in reference to a particular election cycle. This study represents a novel approach in that it considers predictors of voting intention among adolescents, a group for which opportunities might exist to increase future civic participation through education programs prior to reaching voting age.

2. Methods

2.a. Study design and study population

This cross-sectional survey, approved by the [University]'s Institutional Review Board, was conducted within a larger study of urban public school students participating in Generation Citizen's classroom-based civics education program. Generation Citizen is an American non-profit organization that teaches civics and educates for active citizenship. All 1300 students enrolled in Generation Citizen's Providence, RI, and Boston, MA, fall 2010 classes were eligible to participate in the survey upon completion of an informed consent form. The survey was conducted in September 2010, at the beginning of the school year and before beginning participation in the Generation Citizen curriculum or other potentially relevant social studies and civics courses. All students' responses were anonymous; no identifying information was included. The survey was administered by classroom teachers and took 15-30 minutes to complete. Data were entered in Excel 2004 (Microsoft Corporation, Redmond, WA, USA) following a data entry protocol document, with [Author 1] managing this process for quality control purposes, and then transferred into statistical software (Stata version 11.2, StataCorp, College Station, TX, USA) for subsequent analysis.

The survey asked a range of questions, including questions about academics, demographics, and civic knowledge, attitudes, and behaviors, to ascertain information about youth civic engagement and inform programmatic efforts. When possible, we utilized questions from previously validated surveys, including questions from the National Assessment of Educational Progress (civic knowledge), the Civic Health Index Survey (civic knowledge and civic behavior), Moely et al's Civic Attitudes and Skills Questionnaire (civic attitudes and civic behavior), and CIRCLE's Civic and Political Health of the Nation Survey (civic behavior). We then supplemented these with other questions to capture additional information of interest. The demographic questions asked were selected in conversation with civic engagement and civics education academics and practitioners, and refined in conversation with school district administrators.

Students (n=1015) from 14 schools participated in the survey, for a response proportion of 78%. The present analysis was restricted to the 981 students who provided information on our outcome variable of interest, likelihood of future voting.

2.b. Variables of interest

2.b.1. Dependent variable—The likelihood of voting as measured by a Likert-scaled question is frequently used and validated in pre-election polling (Dimock et al, 2001). It has been found to be the best predictor of actual voting among those eligible to vote (Bolstein, 1991), including being preferable to a simpler yes/no question (Perry, 1979), even though a social desirability bias may exist (Maccoby and Maccoby, 1954). Our survey asked the following question: Thinking ahead to the future, when you think about life after high school, how likely do you think you will vote on a regular basis? Participants chose one of five responses: extremely likely, likely, neither likely nor unlikely, unlikely, or extremely unlikely.

2.b.2. Explanatory variables—We examined several latent constructs, within three overarching categories: civic knowledge, civic attitudes, and civic behaviors. We utilized Cronbach's alpha tests, selecting a cut-point of $\alpha=0.6$ to serve as an approximation of whether items are likely to share a common domain ($\alpha>0.6$) or if items are likely in separate domains ($\alpha<0.6$) (Fishman and Galguera, 2003).

2.b.2.a. Civic knowledge: Three different latent civic knowledge constructs were used: civic content knowledge, local civic knowledge, and current events knowledge. Although somewhat related to each other ($\alpha=.58$ approaches the a priori cutpoint), we consider these three constructs as independent constructs because educators often consider separately for pedagogical purposes and defining educational objectives (e.g., Carnegie Corporation of New York and CIRCLE, 2003). Civic content knowledge ($\alpha=0.64$) was measured as a sum score of correct responses to eight multiple-choice questions, three of which came directly from the National Assessment of Educational Progress's civics test. An example of one of these questions was which political party is currently in the majority in the House of Representatives; another question asked what the three branches of government are. Local civic knowledge ($\alpha=0.64$) was calculated as a sum score of students' correct identification of their mayor, governor, and two senators. Current events knowledge was calculated as a sum score of correct responses to three multiple-choice questions asking about recent current events regionally, nationally, and internationally. Although this construct had a low Cronbach's alpha ($\alpha=0.29$), the questions were selected using purposeful criteria (all selected questions had to refer to news covered in regional and/or national newspapers at least two days in the previous month, with a balance between international, national, and regional news, and balancing headline news with details behind the news), and so the construct was kept for the purposes of analysis.

2.b.2.b. Civic attitudes: We consider general self-efficacy and skill-specific self-efficacy as two separate constructs (Cronbach's $\alpha=0.36$). General self-efficacy is a two-item measure ($\alpha=0.80$) that combines reported ability to make a difference individually and ability to make a difference in collaboration with others, each asked as a Likert-scaled question. Skill-specific self-efficacy is a seven-item measure ($\alpha=0.90$), in which respondents rated their perceived ability to write an action plan, persuade people to care about an issue, run a meeting, make a public speech, examine research, write an opinion letter, or organize a petition.

2.b.2.c. Civic behaviors: Prior civic experiences were considered using two different latent constructs: prior general civic experiences and prior skill-specific civic experiences (Cronbach's $\alpha=0.36$). For general civic experience, we asked respondents if they had ever volunteered. To measure civic skill-based experiences, respondents were asked if they had previously had a series of civic experiences, including writing an action plan, persuading people to care about an issue, running a meeting, making a public speech, examining research, writing an opinion letter, organizing a petition, and a catch-all "other" category. We created a binary variable of no prior civic experiences/at least one civic experience.

2.b.2.d. Academic covariates: The academic variables considered were all self-reported: grades, taking Advanced Placement or honors courses, and unexcused absences from school. Grades are an ordered categorical variable that asked students their general grades: mostly As, As and Bs, mostly Bs, Bs and Cs, mostly Cs, Cs and Ds, or mostly Ds. We assigned a linear scale to these categorical variables based on the GPA scale (i.e., 1.0 to 4.0), and tested the assumption of linearity in comparison to a multiple indicators model for grades and determined that our assumption of linearity was satisfactory using a likelihood ratio test (data not shown). Advanced Placement or honors courses was coded as a binary variable: enrolled in such courses, or not. It is worth noting that one of the schools in our sample does not offer any such courses. Unexcused absences was another ordered categorical variable in which students identified the approximate range of times that they had missed school without an excuse from a parent/guardian or teacher.

2.b.2.e. Demographic covariates: Self-reported race/ethnicity was a categorical variable in which respondents could select all that applied. For a more parsimonious model, responses were collapsed into a binary variable of white/non-white, since this collapsing did not meaningfully impact results as compared to considering each racial/ethnic category separately in our model (data not shown). Self-reported gender (male/female) and religious affiliation (do you identify as religious? yes/no) were also examined.

Not all demographic variables of interest were available on the individual level from the survey data collected, so school-level variables were also considered. One school-level factor considered was the percent of students on free or reduced-price lunch at the school (to serve as a proxy of area-level socioeconomic status (Ensminger et al, 2000)). A school's adequate yearly progress status was also considered. This is a summary binary measure (achieving adequate yearly progress or not) utilized under the No Child Left Behind Act of 2001 to hold schools accountable to standardized academic objectives; this served as a rough measure of academic quality. We also considered a school's proportion of students classified as limited English proficiency as a proxy for students with linguistic (and potentially also citizenship) barriers to civic engagement.

2.c. Analysis

Associations were derived from ordered logistic regressions, given that the dependent variable of interest, the respondent's reported likelihood to vote in the future, was an ordered categorical variable coded to a Likert-type scale. Analysis was performed using the

cluster(variable) command in Stata to account for possible non-independence of responses by school.

As the study population was assembled with other analytic and practical objectives in mind, the number of participants required to detect meaningful associations between the self-reported likelihood of future voting and the attributes considered here was not calculated prior to recruitment. Using methods for categorical data (Whitehead, 1993) and taking the binary explanatory variable prior civic experiences as an example, it was estimated that given the number of students observed in each category (i.e., prior civic experience or not) and the observed distribution of self-reported future voting likelihood among students reporting no prior civic experiences, then a study of size equal to the 938 participants with available data for this explanatory variable would have statistical power of 0.92 to detect an association with self-reported future voting equivalent to an odds ratio of 1.5 at a two-tailed hypothesis test rejecting the null at $p < 0.05$. Although this value is not adjusted for clustering by school or for multiple statistical tests, the overall probability of a type II error was deemed sufficiently small to proceed with analysis.

Explanatory variables were selected a priori based on existing research, as described above. First, individual ordered logistic regressions relating each of the civic knowledge, attitudes, and behavior constructs to self-reported likelihood of future voting were conducted to describe crude associations. Then, a single multivariable model was constructed to examine independent associations. All civic knowledge, attitudes, and behavior constructs were maintained in the multivariable model, along with any academic or demographic variables that were crudely associated with self-reported likelihood of future voting ($p \leq 0.1$). No school-level covariate reached this criterion for inclusion, including the percent of students receiving free or reduced price lunch at the school ($p = 0.15$), the percent of students at each school classified as of limited English proficiency ($p = 0.70$), and whether the school made adequate yearly progress ($p = 0.99$). Also excluded from the multivariable model for lack of a statistically significant association with the dependent variable were gender ($p = 0.45$), whether the student attended middle school or high school ($p = .84$), and whether the student lived in Massachusetts or Rhode Island ($p = .85$). Also excluded from the final model were the variables self-reported grades and religious affiliation, each of which were crudely associated with the dependent variable, but not after other variables were added to the model (grades: $p = 0.60$; religious: $p = 0.37$).

A Brant test was used a statistical check of the proportional odds assumption of ordered logistic regression (i.e., that with each unit change in an explanatory variable, the change in the log-odds of moving from a set of consecutive ordered categories at the lower end of the outcome scale to any of the remaining higher categories is the same regardless of the level of the categories that separates the lower and higher sets). Departures from proportionality were addressed by performing a more flexible ordered logistic regression analysis based on a user-written command for Stata, *gologit2* (Williams, 2006).

As the final multivariable model necessarily excluded observations with missing values for any of the explanatory variables, a binary marker was generated to encode the presence of missing data. For comparison, an additional multivariable model was constructed with

imputed values for missing data. Any missing values were replaced using the means for continuous or coded Likert-type variables or, for binary variables, by random single-imputation based on the overall probability of a positive response in the observed data set.

3. Results

The individual self-reported and school-level demographic and academic performance characteristics of the study population are presented in Table 1. More than three-fourths of the students self-identified racially or ethnically as non-white, and one-half of the included schools failed to achieve adequate yearly progress in reading or math during the previous academic year (2009-2010).

Fifty-nine percent of respondents reported that they would be likely or extremely likely to vote in the future (Table 2). The measures of students' civic knowledge, self-efficacy, and experiences are also shown in Table 2. Very few students correctly answered all of the factual questions related to content knowledge (American governance) (2%), current events (2%), or local knowledge (identification of their political representatives) (3%). Students were least likely to fall into the lowest category of either general or skill-specific self-efficacy, while majorities reported general previous civic experience with volunteering and experience in at least one of eight specific civic skill-related activities (Table 2).

Using ordered logistic regression to examine the associations between the self-reported likelihood of future voting and each of the seven civic-related constructs yielded a statistically significant positive association in each instance (Table 3). In a multivariable model including all seven constructs (Table 4), four maintained a positive, statistically significant independent association with future voting likelihood after adjusting for race/ethnicity and AP or honors classes: civic content knowledge, current events knowledge, general self-efficacy, and skill-specific self-efficacy. For both variables related to prior civic experiences (general and skill-specific) and for local civic knowledge, there was a weak positive association that did not achieve statistical significance.

The coefficients in the model represent the change in the ordered log odds of future voting with each standard deviation change in the civic-related construct, holding other model variables constant. A Brant test was suggestive of possible violations of the proportional odds assumption ($p = 0.08$), although when a more flexible multivariable model (Williams, 2006) was considered there were no substantial qualitative differences in the magnitude, direction, or statistical significance of the coefficients in comparison to those of the more parsimonious model reported in Table 4 (data not shown).

The multivariable model only included those 592 individuals without missing data for any relevant survey question. In a separate ordered logistic regression, having at least one missing value was not significantly associated with the self-reported likelihood of future voting ($\beta = 0.08$, $p = 0.52$). Based on the data available, those with missing information were less likely to report prior civic participation than those included in the multivariable model (46% versus 56%, $p = 0.002$). No other statistically significant association was identified between missing data and demographic, academic, or civic-related variables (data not shown). When the multivariable ordered logistic regression model was run using

imputed and randomly generated values for missing continuous and binary variables, respectively, the results were very similar to those from the model using only individuals with complete information (data not shown).

4. Discussion

In this school-based survey population of urban adolescents, civic knowledge and civic attitudes are associated with the intention to vote in the future, one aspect of civic engagement. In particular, increased civic content knowledge, current events knowledge, general self-efficacy, and skill-specific self-efficacy are each independently associated with increased self-reported likelihood of future voting. These findings build upon and are congruent with other studies (e.g., Torney-Purta and Amadeo, 2003) that have found civic knowledge and self-efficacy to be strong predictors of intended future voting among adolescents.

These findings are consistent with the suggestion that educational programs targeting civic-related knowledge and beliefs might successfully increase the future civic engagement of young people. However, since these are cross-sectional data, our analyses cannot elucidate causality. It is entirely possible that these observed associations are due to other unmeasured characteristics of young future voters that also make them more likely to perform better on tests of civic knowledge or self-efficacy. While from these data alone it cannot be determined whether efforts to increase knowledge and empowerment will result in greater future civic engagement among those that would otherwise not vote, future study of this question appears warranted.

The civic content knowledge traditionally covered in civics classes—like the three branches of government—is associated with likelihood of voting, as others (e.g., Hart et al, 2007) have found. Additionally, so are other factors—current events knowledge and both general and skill-specific self-efficacy—that are often included in “civics-plus” curricula that are emerging as ways to educate for civic engagement (Galston, 2007). Despite the limitations of the available data, we hypothesize that encouraging students to learn about the world around them helps students understand the relevance of civics knowledge and opportunities for engagement.

Three constructs—local political knowledge and our two civic behavior constructs (general and skill-specific)—were crudely associated with self-reported likelihood of future voting in our sample (Table 3), but not once other factors were considered in a multivariable model (Table 4). It is possible that local political knowledge may be predicted by the other civic knowledge factors in the model, and so it does not have an independent effect.

Interestingly, our two measures of civic experience were not associated with future civic engagement. Other studies of American adolescents (e.g., Torney-Purta and Amadeo, 2003) have also found that volunteering is not associated with likelihood of future voting. Since we categorized prior experiences into binary ever/never variables, the present analysis could not detect any possible relationships with the quality of these experiences. Kahne and Sporte (2008) note that only certain civic experiences (in their research, service-learning experiences) are associated with civic participation, and that not all volunteering and skill-

specific civic experiences are necessarily situated within such supportive and empowering context. Kahne and Westheimer (2003) suggest that civics curricula are one way of harnessing the potential power of civic experiences through capacity-building and teaching necessary skills so that students can complete their civic action of interest effectively. Community service learning, which provides students a structured context to increase awareness of and commitment to political and social issues, is another approach (Seider et al, 2010).

Both race/ethnicity and taking Advanced Placement or honors courses were associated with likelihood of voting both individually (data not shown) and within a multivariable model (Table 4). Notably, these social inequalities were detected among a population not yet eligible to vote, which may be important to consider as our society seeks equitable and high levels of civic engagement and voter participation.

This analysis does not attempt to exhaustively describe a youth's probability of voting, especially given that others' models (e.g., Matsusaka and Palda, 1999) have not been able to explain much of the variance in likelihood of voting, and also because by doing secondary data analysis, we are inherently limited by the questions asked in the survey tool. Other variables that may explain a youth's likelihood to vote were not collected within this dataset because they are outside of the scope of educators' ability to intervene including factors at home (Andolina et al, 2003). For example, parental factors are one such pathway: parental political values are often transmitted to children (Jennings and Niemi, 1968). Beck and Jennings (1982) found that parent political participation affected youth political activity, and Kahne and Spote (2008) reported that students who discussed civic and political issues with their parents were more likely to be committed to civic participation. Additionally, type of school (e.g., public or parochial) attended may affect voting patterns (Dee, 2005). The study population—namely, that they were all adolescent urban public school students—prevented our analysis from considering differences that may exist by geographic location, type of school, or educational attainment.

The majority of the research literature to date has focused on whether those eligible to vote actually do, as opposed to looking at pre-voting age individuals. Faced with declining voter turnout over recent generations (Soule, 2001), identifying opportunities to encourage civic engagement is increasingly important. Improving future civic participation by targeting adolescents might represent the most fruitful and practical objective for planned interventions. The associations identified in this study are consistent with other research in support of civics education as a method to empower students with diverse civic-related knowledge and the skills necessary to feel efficacious (e.g., Kahne and Westheimer, 2003; Torney-Purta, 2001), including through methods like guided experiential civics education (Levinson, 2012) and place-based, student-centered work (Cohen et al, 2012; Peloso, 2007). However, both the generalizability and any causal interpretations of the present results await further study.

5. Future Directions

Among urban youth in Massachusetts and Rhode Island, there were statistically significant positive associations with the self-reported likelihood of future voting and specific aspects of civic knowledge and civic attitudes. Though self-reported intent is a useful proxy, whether or not civic knowledge, attitudes, and behaviors measured in adolescence are associated with actual voting practices or other aspects of civic engagement in the future can only be examined through longitudinal studies. Further, the extent to which future civic engagement can be modified by specific efforts, such as enhanced school-based civics education, must be answered by methodologically sound intervention studies. Qualitative research offers a promising direction to explore possible mechanisms connecting civics-related knowledge, attitudes, experiences, and engagement, which can subsequently be tested in hypothesis-driven randomized controlled trials.

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Table 1

Sample characteristics.

Individual Self-Reported Demographic Variables		
	Number of respondents	Number in Category (percent of sample)
Female	930	442 (47.5%)
Race/Ethnicity	910	
Asian/Pacific Islander		160 (17.6%)
Black/African American		211 (40.8%)
Latino/Hispanic		172 (18.9%)
Multiracial		102 (11.2%)
Other		51 (5.6%)
White/Caucasian		214 (23.5%)
Identify as Religious	907	525 (57.9%)
Age	968	
Middle school		321 (33.2%)
High school		647 (66.8%)
Individual Self-Reported Academic Variables		
	Number of respondents	Number in Category (percent)
Academic performance	761	
Mostly As		250 (30.2%)
Mostly Bs		318 (38.4%)
Mostly Cs		157 (18.9%)
Mostly Ds		36 (4.3%)
More than 5 unexcused absences in last semester	810	93 (11.5%)
School-Level Characteristics (number of schools = 14)		
Proportion of Students Qualified for Free or Reduced Lunch		
Median, % (Range, %)		68.7% (11% - 84%)
Number of Schools Above 50% (% of students in those schools)		12 (91.8%)
Number of Schools Above 75% (% of students in those schools)		4 (15.3%)
Adequate Yearly Progress (AYP)		
Number of schools achieving AYP for neither reading nor math (% of students attending those schools)		7 (24.1%)
Number of schools achieving AYP in either reading or math (% of students attending those schools)		4 (33.2%)
Number of schools achieving AYP in both reading and math (% of students attending those schools)		3 (42.8%)

Table 2

Distribution of outcome variables and explanatory variables.

Outcome variable		
	Number of respondents	Number in Category (% of respondents)
Likelihood of voting in the future	981	
Extremely unlikely		72 (7.3%)
Unlikely		113 (11.5%)
Neither unlikely nor likely		220 (22.4%)
Likely		408 (41.6%)
Extremely likely		168 (17.1%)
Explanatory variables		
<i>Civic knowledge</i>		
Civic content knowledge (8 multiple-choice questions, scored)	894	Mean=3.55 (SD=2.04)(range: 0-8)
Local political knowledge (correctly identifying one's mayor, governor, and senators, scored)	965	Mean=.90 (SD=1.09)(range: 0-4)
Current events knowledge (3 questions related to regional and national current events, scored)	911	Mean=.77 (SD=.79)(range: 0-3)
<i>Civic attitude</i>		
General civic self-efficacy (sum of two Likert-scaled questions, each coded from 1-5, with higher values implying higher self-efficacy)	974	Mean=7.65 (SD=1.67)(range: 2-10)
Skill-specific civic self-efficacy (sum of seven Likert-scaled questions, each coded from 1-5, with higher values implying higher self-efficacy)	893	Mean=21.98 (SD=6.61)(range: 7-35)
<i>Civic behaviors</i>		
General civic experience: Ever volunteered	972	581 (59.8%)
Skill-specific civic experiences	938	
0 prior experiences		449 (47.9%)
1-4 prior experiences		466 (49.7%)
5-8 prior experiences		23 (2.5%)

Table 3

Crude associations between each civic-related construct and the self-reported likelihood of future voting.

Civic-related construct	Variable type	n	β	95% confidence interval	p
Civic knowledge					
Content/governance knowledge	continuous, standardized	894	0.55	0.41, 0.68	<0.0005
Current events	continuous, standardized	911	0.44	0.32, 0.55	<0.0005
Local civic knowledge	continuous, standardized	965	0.30	0.15, 0.45	<0.0005
Civic attitude					
General self-efficacy	continuous, standardized	974	0.64	0.49, 0.79	<0.0005
Skill-specific self-efficacy	continuous, standardized	893	0.54	0.41, 0.66	<0.0005
Prior civic behavior					
General experience (ever volunteered)	binary	972	0.53	0.22, 0.84	0.001
Skill-specific experience	binary	938	0.53	0.36, 0.71	<0.0005

n = number of respondents

β = coefficients from seven ordered logistic regression models for the association of each civic-related construct and the self-reported likelihood of future voting. Each civic-related construct was considered in a separate model without the inclusion of other variables. Variance calculations were adjusted to reflect clustering by school.

Table 4

Associations between each of the civic-related constructs and likelihood of future voting, controlling for demographic covariates and all the other civic-related constructs.

Civic-related construct	Variable type	β	95% confidence interval	p
Civic knowledge				
Content/governance knowledge	continuous, standardized	0.35	0.19, 0.51	<0.0005
Current events	continuous, standardized	0.17	0.02, 0.33	0.030
Local civic knowledge	continuous, standardized	0.03	-0.11, 0.17	0.66
Civic attitude				
General self-efficacy	continuous, standardized	0.48	0.30, 0.67	<0.0005
Skill-specific self-efficacy	continuous, standardized	0.26	0.09, 0.44	0.003
Prior civic behavior				
General experience (ever volunteered)	binary	0.09	-0.20, 0.38	0.55
Skill-specific experience	binary	0.09	-0.18, 0.36	0.50
Demographic and academic variables				
White race/ethnicity	binary	0.33	0.06, 0.59	0.016
AP or honors classes	binary	0.55	0.29, 0.81	<0.0005

β = coefficient from a single ordered logistic regression model for the association of all civic-related constructs and the self-reported likelihood of future voting, adjusted for demographic and academic variables

Variance calculations were adjusted to reflect clustering by school. The model included 592 individuals without missing values.