

Educational Attainment and Social Norms of Voting

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Abstract

Why do highly educated Americans vote at higher rates than less educated Americans? Prominent theories attribute the education's effect to human capital. However, human capital theories tend to neglect individuals' motivations to vote. We test a theory of differential norms as an alternative explanation. Many Americans vote out of a sense of civic duty—in other words, to adhere to social norms of voting. However, those norms are not universal, nor do they arise as a matter of course. Rather, we argue that norms of voting are inculcated in educational institutions and reinforced to differing extents within social networks segregated by levels of educational attainment. Consequently, greater educational attainment should both increase exposure to voting norms and make citizens more likely to have internalized them after graduation. As a test of the theory, we conduct three studies demonstrating differences in internalization of voting norms across levels of education. In two observational studies relying on the 2016 ANES and CCES, we show that highly educated people are more likely to view voting as a civic duty, that civic duty partially mediates the effect of education on validated voting, and that the likelihood of overreporting increases with educational attainment. In a third study featuring a survey experiment, we show that educated respondents are less likely to choose receiving a hypothetical financial incentive than to express a willingness to vote. The results suggest that more attention should be given to citizens' motivations for voting, including how motivations such as compliance with social norms might vary across subgroups in the population. Further, our analysis highlights the importance of understanding how social norms about voting arise in the first place. By better understanding citizens' motivations to vote, activists interested in increasing turnout can design targeted interventions that help reduce disparities in participation.

Keywords: Voting, Education, Civic Duty, Norms

Why are highly educated Americans more likely to vote? The association between education and voting is by now well established (Campbell et al. 1960; Leighley & Nagler 2014; Verba, Schlozman, & Brady 1995; Verba & Nie 1972; Wolfinger & Rosenstone 1980), and more recent work has provided evidence that education’s effect on voting is causal (Milligan, Moretti, & Oreopoulos 2004; Sondheimer & Green 2010). Despite its importance, research establishing the mechanisms underlying the relationship remains incomplete. Predominant explanations tend to attribute the effect of education to the accrual of human capital, arguing for example that education allows students to develop verbal (e.g. Condon 2015), psychosocial (e.g. Holbein 2017), and civic (e.g. Verba, Schlozman, & Brady 1995) skills, or to obtain the political information (e.g. Delli Carpini & Keeter 1996) necessary for participating fully in democratic discourse and debate. According to these accounts, voting presents costs to citizens that the educated are better able to pay.

While important in elucidating individual *capacity* to vote, human capital theories do not necessarily explain individual *motivation* to vote (Miller 2013). This overlooks a crucial element of voting behavior. Without sufficient motivation, even high levels of human capital will make no difference. Deciding that one wants to participate comes before any considerations about whether one is able to do so. This is especially the case with a relatively low-cost activity like voting, where simply feeling motivated to vote can make the difference between voting and abstaining. In other words, human capital may be a necessary but insufficient condition explaining the link between education and voting behavior. Accounting for motivational differences has the potential to further explain persistent voting disparities.

This paper directly addresses motivational differences by testing the proposition that the more educated obtain greater social benefits from voting. We do so by examining voting as a social norm. We claim that individuals who are more educated are, all things equal, more likely to have internalized norms governing voting behavior. Norms motivate voting behavior and are continuously reinforced throughout one’s education. Because educational attainment affects not only one’s training but also one’s social environment, norms surrounding voting

remain continually reinforced within social networks long after individuals leave school.

In three studies, we provide evidence that norm internalization partially accounts for the relationship between education and voting. First, we analyze data from the 2016 American National Election Study. We find that education is positively correlated with seeing voting as a civic duty. Causal mediation analysis provides evidence that normatively viewing voting as a civic duty mediates the relationship between educational attainment and validated voting behavior. Second, we compare overreporting behavior among individuals with varying levels of education. If more educated individuals feel more internalized pressure to vote, we should find that more educated individuals are more likely to report having voted when, in reality, they did not. Analysis of two national surveys conducted after the 2016 general election confirms that the likelihood of overreporting increases with education. Third, we analyze data from an original survey experiment conducted via Mechanical Turk. The experiment subjects respondents to different hypothetical voting scenarios to determine how their behavior varies by education. We find that educated respondents are more likely to withstand stimuli incentivizing them not to vote in an upcoming election.

The results across three studies provide consistent evidence that voting disparities by educational attainment are due, in part, to differences in internalized norms of voting. Because the effect sizes we uncover are generally small, we do not claim that disparities in civic norms are the only or even the primary force driving the turnout gap. However, our findings underscore that motivational differences can help explain long-standing educational disparities in voting behavior.

Because educational attainment in the U.S. is a strong marker of social class, this research has noteworthy implications for research on inequality in political participation. It suggests that research focusing solely on resources in explaining class-based voting disparities misses part of the story. Differences in social norms and community beliefs that arise across class boundaries also have political consequences. Efforts to close the turnout gap will be incomplete if reformers and activists focus exclusively on eliminating barriers to voting or

on motivating citizens with appeals to their civic duty. These efforts need to be matched with appeals to motivations that are more widely shared across social classes.

Social Norms and Voting Behavior

Americans commonly explain their motivation to vote by citing their sense of civic duty, an idea with deep roots in American political culture (e.g., de Tocqueville [1835] 1988). Existing research on voting recognizes civic duty's motivating role, even as it has largely neglected the uneven development of a sense of duty in the population. Classic economic models of voting include civic duty in their equations (e.g. Riker & Ordeshook 1968). Empirical work provides additional evidence that feelings of civic duty truly do motivate turnout, both in the U.S. (Blais & Achen 2018; Campbell et al. 1960; Lewis-Beck et al. 2008) and in other advanced democracies (Blais 2000; Galais & Blais 2016).

Civic duty is one way to refer to a norm of voting—a sense that one *should* vote or that it is *good* to vote. Social norms guide behavior by conveying group standards about expected practices (McDonald & Crandall 2015). People engage in activities not simply because it addresses an immediate need, but because they are motivated to comply with behaviors that others would approve of—what psychologists call referent groups and individuals. The more people need referents' approval, the more likely they are to engage in the behaviors that referents prefer (Montano & Kasprzyk 2015).

In explaining the influence of social norms, social psychologists make a distinction between descriptive and injunctive norms (Cialdini & Goldstein 2004). Descriptive norms represent what types of behavior are typical. Injunctive norms prescribe certain types of behavior—they tell people what they ought to do. Each type fulfills a different social function (Cialdini, Reno, & Kallgren 1990; Kallgren, Reno, & Cialdini 2000). Descriptive norms help individuals make optimal choices as people observe and imitate their peers' behavior, void of any explicit social pressure. Complying with descriptive norms is a relatively auto-

matic, low-effort process that guides an individual to a socially safe practice (Morris et al. 2015). Injunctive norms, by contrast, motivate people to engage in behaviors they might not otherwise engage in through social pressure and the threat of social sanctions. Complying with injunctive norms is more effortful, deliberate, and strategic. It signals that an individual belongs to whatever group is granting social approval.

Relative to descriptive norms, injunctive voting norms more effectively motivate voting behavior. Consistent voting is still an irregular practice in the United States (taking numerous annual federal, state, and local elections into account), which means conveying the descriptive norm could *depress* voting. People who engage in normative behaviors at disproportionate rates have been found to bring their behavior in line with prevailing practices when exposed to a descriptive norm (Schultz et al. 2007). More generally, psychologists have found evidence of a boomerang effect, whereby learning that a behavior is both common and bad—like failing to show up on Election Day—makes people more likely to engage in it (Miller & Prentice 2016). Injunctive norms, which promise social approval through engaging in effortful practices, present no such risk.

The empirical literature in political science bears out the prediction that injunctive norms are more effective at motivating voting behavior. Numerous get-out-the-vote (GOTV) field experiments have found that reminding citizens of their civic duty, promising to report their voting behavior to neighbors, or inducing feelings of pride or shame increase the likelihood they will vote (Gerber, Green, & Larimer 2010, 2008; Panagopoulos 2010, 2013). In contrast, exposure to descriptive norms (for example, telling a person that lots of people are voting) seems to make subjects in similar experiments more likely to state their intention to vote (Gerber & Rogers 2009), but not to cast a ballot in reality (Panagopoulos, Larimer, & Condon 2014).

Injunctive norms shape behavior through the threat of social sanction and the reward of social approval. Psychologists have documented that norms can also influence behavior by becoming internalized, which refers to social standards becoming personal standards

(Thogersen 2006). When a norm is internalized, social surveillance is not necessary for norms to be enforced. Instead, people comply with internalized norms in order to avoid feelings of guilt or to express their values (Morris et al. 2015).

Given uneven turnout rates, it is clear that not all citizens adhere to voting norms in the U.S. One explanation is that individuals vary in how much they internalize norms and behave in line with them. Another explanation is that different norms prevail in different subsets of the population. Relatively few studies have examined whether and how voting norms vary across subgroups in the population. The research that does so tends to focus on geographic or contextual variation—how the composition and characteristics of communities shape norms and ultimately voting behavior (Campbell 2006; Doherty et al. 2017; Gimpel, Lay, & Schuknecht 2003). But norms also vary within subgroups of the population (see Anoll 2018), and those subgroup boundaries may not match geographic or community boundaries.

Educational Attainment and Voting Norms

We contend that voting disparities by educational attainment can be partially attributed to differences in the cumulative internalization of voting norms throughout a person's education. Voting norms are first introduced during primary and secondary education, both informally through positive example from parents or teachers and formally through curricular instruction. Those norms are also reinforced and internalized the longer that an individual (a) remains embedded within educational institutions and (b) remains part of a social network comprised of people who have also remained embedded in those institutions.

Schools help students develop normative social behaviors alongside more concrete skills and knowledge bases. This is particularly true of civic attitudes (Campbell 2006; Hess & Torney-Purta 2005; Nie, Junn, & Stehlik-Barry 1996). Schools teach American history, encourage political participation, and foster civic-mindedness. Most germanely, schools teach students that voting is a positive behavior that they, too, should engage in.

Primary and secondary schools provide a foundation for all students to learn the normative importance of voting. These institutions are not the sole source from which voting norms diffuse, and neither do all students exposed to these norms in school internalize them. If they did, the U.S. would likely experience a higher turnout rate, given that education is mandatory until at least age 16 in most states. Families, extended social networks, and broader community contexts also play a role in establishing norms of voting (Campbell 2006). However, the more attention and reiteration a norm receives—when it is positively reinforced through encouragement or negatively reinforced through social sanction—the more likely the individual is to behave in accordance with it (Cialdini & Goldstein 2004; Kallgren, Reno, & Cialdini 2000).

Consequently, disparities in internalized norms of voting should emerge along the lines of educational attainment as students continue or stop their education in late adolescence. Students who continue their education are more likely to internalize norms of voting as they continue to be embedded in institutions and social networks where a norm of voting prevails and attention to it is drawn.

A clear cutoff point where norms begin to be enforced differently emerges as students sort themselves into attending college or entering the workforce directly. College students are exposed to norms of voting in ways that young people outside of colleges are not. College curriculum, especially in the social sciences, encourages participation (Hillygus 2005). Further, college students encounter voter registration drives and GOTV campaigns targeted directly at increasing youth turnout, often implemented by their peers, professors, and administrators. Crucially, social enforcement of voting norms in college occurs just at the time when students are old enough to begin voting legally. Presumably, students who are more predisposed to adhere to norms of voting will also be more likely to select into additional educational attainment. This self-selection process suggests that college students are more likely to be surrounded by peers who share the voting norm. The typical social and civic environments at U.S. postsecondary institutions are thus conducive for instilling voting norms

in those who have not yet internalized them and for reinforcing them among those who have.

Students eventually complete their education and leave the social and civic environments of universities. However, the norms that students learn continue to be enforced by highly educated peers and individuals in their families and social networks. Americans' social networks are notably segregated along the lines of education (McPherson, Smith-Lovin, & Cook 2001), and American communities over the last half century have grown more segregated by income (Reardon & Bischoff 2011; Watson 2009), a strong positive correlate with educational attainment. Some evidence suggests that social distance between people of differing education levels has increased in recent decades (Mare 1991; Schwartz 2010; Smith, McPherson, & Smith-Lovin 2014). Much of that shift is likely attributable to changes within families, as the integration of women into the workforce has made spouses with the same education level more common than it was a half century ago (Smith, McPherson, & Smith-Lovin 2014). If individuals are less likely to have close relationships with people of differing education levels, peer-to-peer enforcement of voting norms is more likely to remain within strata of the population where voting is already viewed as expected behavior.

Schooling and the social networks that develop out of it reinforce voting norms, which makes educated citizens more likely to understand voting as a civic duty. In turn, their appreciation for this voting norm should shape their voting behavior, both in school and long after they have left.

Ours is not the first or only explanation of how norms established in educational institutions drive voting behavior. Our argument bears a good deal of resemblance to the point briefly made by Wolfinger & Rosenstone (1980) that, "American schools provide a good deal of explicit instruction and exhortation on citizenship that emphasizes the obligation to vote and thus might be thought to nurture a sense of civic duty" (18). While the authors' analysis stops at showing the correlation between educational attainment and civic duty, we test further empirical implications of the argument.

Campbell (2006) also provides evidence that schools inculcate civic norms in students.

But whereas Campbell’s work focuses on how the cross-sectional variation in the civic culture of subjects’ high schools drive their voting behavior later in life, the present work focuses on the cumulative contributions of remaining within educational institutions to one’s sense of civic duty and, subsequently, their voting behavior. In fact, his models show an additional positive effect of educational attainment on adult voting behavior once controlling for civic culture in adolescence, though the mechanism for this effect is not specified (Campbell 2006, 165).

Recent research has also confirmed the role of social pressure in spurring turnout (Doherty et al. 2017; Gerber, Green, & Larimer 2010, 2008; Gerber et al. 2016; Panagopoulos 2010; Panagopoulos, Larimer, & Condon 2014). We see our work as complementing this literature, since social pressure is the mechanism through which norms are enforced. However, these studies tend to rely upon experimental methods that show the causal effect of applying social pressure to respondents. In contrast, our argument is that social pressure (as embodied in internalized norms) is already present in the decision to vote, sometimes unrecognized by individuals and affecting behavior without an explicit prompt from others (see also McDonald & Crandall 2015). For individuals who have internalized and consistently adhere to norms of voting, exposure to additional social pressure should have no effect; they will vote regardless.

Our account of internalized norms complements, rather than contradicts, predominant theories of human capital as a mechanism for the effect of education on voting. By focusing on motivations to vote, we claim that disparities begin in the earliest stage of the causal process—namely, wanting to vote in the first place. Further, norms are a form of a motivation that require continual attention and reinforcement in social networks to remain effective.

To summarize, individuals should be more likely to internalize voting as a civic duty as they attain more education. The social environments of American colleges and universities prioritize political interest and awareness. Civic participation, especially voting, is an expected behavior, and consistent reminders of this expectation should eventually become self-enforcing. Voting regularly simply becomes taken for granted, even in the absence of

active social pressure to do so (Morris et al. 2015). The longer an individual remains embedded in educational institutions, the more likely voting norms are to become internalized. In turn, the highly educated should feel motivated to vote regularly in elections, without needing to be reminded of the injunctive norm in the lead up to election day.

Study 1: Mediation Analysis

In what follows, we test the norm internalization hypothesis in three studies. We first test two expectations that directly derive from it: that educational attainment is associated with viewing voting as a civic duty, and that this view partially mediates the effect of education on voting. We then test two additional implications of our theory. If social norms drive differences in voting behavior, we should find that educated individuals face pressure to report having voted even when they did not. And if civic duty norms make the educated particularly motivated, they should be more willing to withstand discouragements to vote.

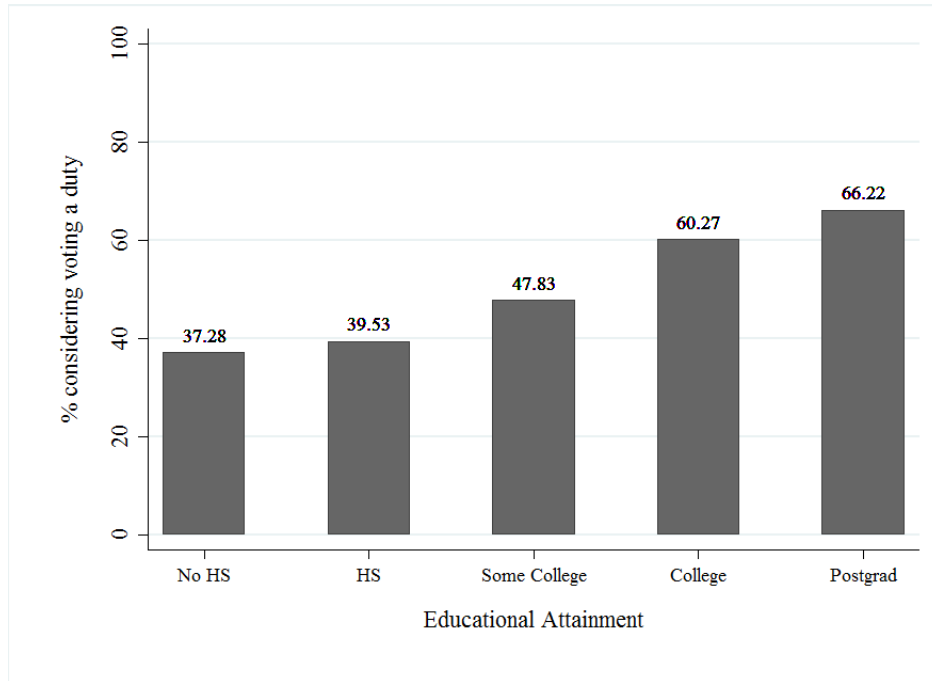
We first test our expectation that more educated citizens are more likely to understand voting as a civic duty. Then we test whether the association between education and voting norms helps account for education-based voting disparities. The American National Election Studies' 2016 Time Series Study is well suited to test these expectations, since it both asked respondents whether they thought voting was a civic duty and validated their voting behavior in the 2016 general election.

To assess respondents' endorsement of the voting norm, we rely on the following question:

Different people feel differently about voting. For some, voting is a duty—they feel they should vote in every election no matter how they feel about the candidates and parties. For others voting is a choice—they feel free to vote or not to vote, depending on how they feel about the candidates and parties. For you personally, is voting mainly a duty, mainly a choice, or neither a duty nor a choice?

Asking whether voting is a duty provides a good measure of whether individuals subscribe to the normative view of voting. In the ANES sample, 51.2% of respondents felt that voting

Figure 1: Education and Civic Duty



Source: 2016 American National Election Study.

is mainly a duty, 37.9% of respondents felt that voting is mainly a choice, and the remaining 10.8% felt that voting is neither a duty nor a choice. To assess civic duty's binary relationship with educational attainment, we created an ordinal variable *Education* such that a value of 0 indicates the respondent did not graduate high school, 1 indicates the respondent graduated high school only, 2 indicates the respondent completed some college credit, 3 indicates the respondent completed a 4-year Bachelor's degree, and 4 indicates the respondent completed a graduate or professional degree. If education instills and reinforces a personal norm of voting, we should find that higher levels of education predict greater agreement that voting is mainly a duty.

Figure 1 displays the prevalence of believing that voting is a civic duty across levels of education. The differences in a sense of duty across groups are stark. While a little more than a third of respondents without a high school diploma reported feeling voting is a duty, almost two thirds of respondents with postgraduate degrees felt the same.

Of course, the personal characteristics of individuals with and without advanced degrees differ quite a bit. We estimated two multiple regression models to control for potential confounding factors. As the dependent variable for both, we relied on the same civic duty item described above. When fully branched, responses to this question become a 7-point civic duty scale, where higher values indicate greater endorsement of the voting norm. The first model uses the ordinal measure of educational attainment described above; the second uses the binary variable *College*, with values of one indicating the respondent holds a four-year bachelor’s degree. In both models we control for age, sex, race, ethnicity, nation of origin, religious attendance, strength of partisanship, and political interest.¹

Table 3 in the appendix reports the full results of both regression models. In line with expectations, the coefficient estimate for the education variable is positive and statistically significant in both models after controlling for these factors. The ANES data supports our expectation that the voting norm increases with education.

We next test whether civic duty mediates the effect of education on voting behavior. The dependent variable we analyze is a binary measure of respondents’ voting behavior, which is coded as 1 if the respondent voted in the 2016 presidential election and 0 if she did not. We use respondents’ validated voting behavior, rather than relying on self-reports. We continue to use the measures of education and the civic duty norm described above.

Traditional mediation analyses using observational data seek to measure the indirect effects of some variable X on a dependent variable Y through a mediating variable M (e.g. Baron & Kenny 1986). However, traditional mediation analysis of observational data using OLS estimators has been criticized for producing biased estimates (Bullock, Green, & Ha

¹Age is a respondent’s self-reported age in years, controlling for shifting norms of political involvement over time in the U.S. The squared term for age is also included in the model. *Female* is a binary variable indicating respondents’ sex. *White*, *Black*, and *Hispanic* are binary variables indicating the race/ethnicity by which respondents self-identify. *Foreign Born* is a binary variable with a value of 1 indicating the respondent was outside the U.S., controlling for differences in political norms across cultures. *Religious Attendance* is an ordinal variable measuring the frequency of a respondent’s participation in religious services, controlling for norms of social obligation instilled through religious institutions rather than schools. *PID Strength* is a folded 7-point party identification scale. A value of 0 indicates true independents, 1 indicates party-leaning independents, 2 indicates weak partisans, and 3 indicates strong partisans. *Interest* measures respondents’ self-reported interest in politics, ranging from a value of 0 (not at all interested) to 3 (very interested).

2010; Bullock & Ha 2011). In short, OLS produces unbiased estimates of indirect effects only if no other mediating variable Z affects both M and Y (i.e. there are not multiple mediators)—an assumption that social science researchers can rarely justify. In the context of our research, it requires an assumption that no other variable simultaneously affects both civic duty and turnout.

In an ideal research design, indirect effects could be estimated if both the treatment variable X and the mediating variable M were randomly assigned. Of course in the real world, neither educational attainment nor feelings of civic duty meet this criterion. We take a step beyond traditional mediation analysis while working within the constraints of the available observational data by employing a matching approach in concert with causal mediation analysis (Imai et al. 2011). Imai and colleagues’ technique allows researchers to estimate an average causal mediation effect (ACME) when the treatment variable X is randomized but the mediating variable M is not. Instead, post-estimation sensitivity analysis allows the researcher to estimate the threat to inference from unobserved variables confounding the mediating effect. We use matching to preprocess the data so that our treatment X approximates as-if random assignment (Ho et al. 2007).²

For this analysis, we use *College*, a binary measure of educational attainment with values of one indicating the respondent holds a four-year bachelor’s degree. We rely on this cutoff because our theory suggests graduating from college is a significant educational achievement that meaningfully distinguishes graduates and non-graduates’ appreciation for voting norms. Educational attainment is not randomly assigned, and so we match on a variety of observed pre-treatment covariates using the genetic matching technique developed by Sekhon & Di-amond (2013). The list of covariates and an analysis of balance is presented in Figure 5 in the appendix.

Next, we estimate the average causal mediation effect of a college degree on voting through civic duty. The effects are estimated using linear regression for the mediator model and probit

²We note that we match only on observables, leaving open the possibility of confounding through unobserved variables.

Table 1: Average Causal Mediation Effects

	Variable of Interest	Placebo
Civic Duty (ACME)	0.023 [0.015, 0.030]	
Science Spending (ACME)		0.005 [0.000, 0.010]
College (ADE)	0.146 [0.115, 0.180]	0.165 [0.130, 0.200]

Note: Estimated effect size for each variable, with 95% confidence intervals in brackets below. The estimates decompose the total effect of college education on voting into the indirect effect through the mediating variable (ACME) and the direct effect of college education on voting (ADE).

for the outcome model. The results are presented in Table 1.

The results indicate a small but significant indirect effect of a college degree on validated voting behavior through civic duty. The estimated ACME for the mediator civic duty is roughly 0.023, while the estimated average direct effect of a college degree is estimated to be 0.146. The results indicate roughly 14% of the total effect of a college degree of voting is mediated by a sense of civic duty.³

We note that this finding rests on the sequential ignorability assumption, which holds that no unobserved confounding variables affect both the mediator and the outcome. Sensitivity analysis allows us to quantify what proportion of the variance (R^2) in the mediating and outcome variables would need to be explained by a confounding covariate for the sign of the ACME estimate to change from positive to negative. The analysis indicates that the true ACME changes signs if the product of these two R^2 values is greater than 0.0357. That is, the positive estimate is robust if unobserved confounders explain less than about 19% of the variance in both the mediator and outcome models ($\sqrt{0.0357} = 0.1889$). Plots of the sensitivity analysis for both the sensitivity parameter ρ and the model R^2 values are located in Figure 6 in the appendix.

³The 14% is calculated from dividing the ACME by the total effect.

Because of the high sensitivity of our results to the assumptions of the specification, we compare the mediating effect of civic duty to a placebo variable. If the placebo variable indicates a comparable mediating effect to civic duty, then we should be more suspicious of the results obtained for civic duty. For comparison, the placebo should be a variable affected by a person’s education level but that should not affect a person’s likelihood of voting. For this purpose, we chose a survey item measuring respondents’ preferences for federal government spending on scientific research on a three-point scale (*Science Spending*). In line with the requirements of the placebo variable, education is positively associated with support for increasing spending on scientific research. However, we have little reason to suspect that attitudes toward science spending motivate voting behavior. Even among the well-educated, federal science spending is neither known to mobilize a large and passionate constituency to go to the polls, nor was it a campaign issue made prominent by either Donald Trump or Hillary Clinton in 2016 as respondents replied to ANES researchers.

The estimated ACME for the placebo is listed in the second column of Table 1. In line with expectations, the estimate is smaller (0.005), indicating less than 3% of the effect of education on voting is mediated by support for science spending. The confidence interval for the ACME strictly speaking does not cross zero. However, sensitivity analysis (located in Figure 7 in the appendix) indicates that the true ACME changes signs if the product of the R^2 values for confounding variables in the mediator and outcome models is greater than 0—indicating that, for all intents and purposes, the mediation effect for this variable is null.

Overall, the results indicate an indirect effect of educational attainment on voting through civic duty. We urge caution in the interpretation of this result; the results above do not constitute unimpeachable evidence of a causal mediation effect. Unobserved confounders in the matching process may threaten inference. Readers may also think of variables other than educational attainment that affect both a sense of civic duty and voting behavior, in violation of the assumption of sequential ignorability. However, we do think the method employed here represents an improvement over traditional mediation analysis, particularly

given the constraints of the available observational data. Resting on the assumptions of the model, the results support our prediction that a sense of civic duty mediates the effect of education on voting.

Study 2: Overreporting

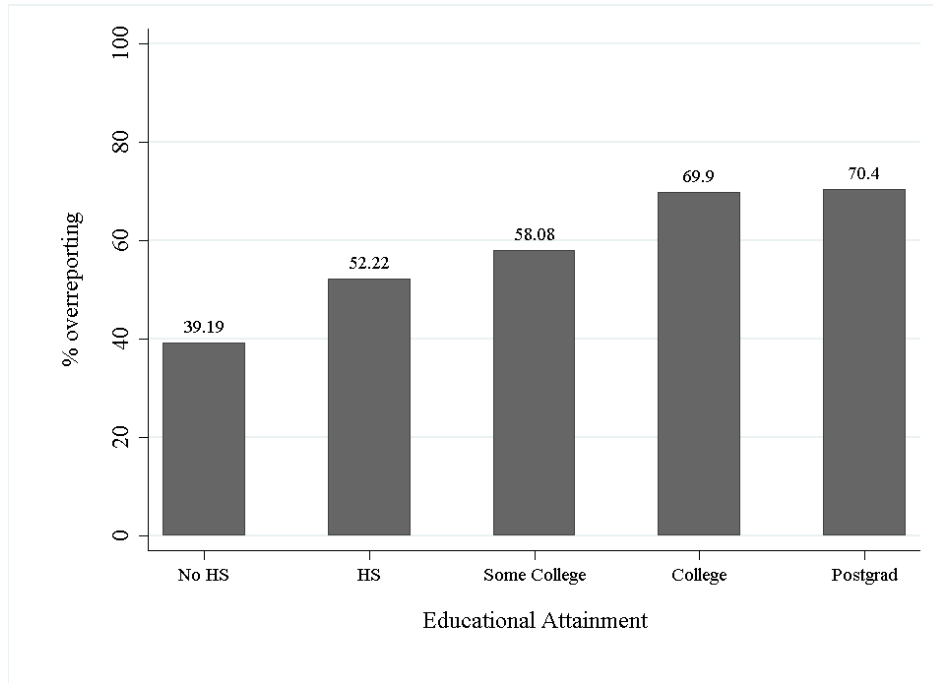
Study 1 provides evidence that education makes citizens more likely to perceive voting as a civic duty, which, in turn, prompts them to vote. Next we turn to a second implication of our theory. If, as we claim, recognizing the normative importance of voting drives the more educated to vote, we should find that they reported having voted even when they did not—also referred to as “overreporting.” Because their behavior is shaped by sustaining prevailing norms, they will be reluctant to admit when their actions deviate from social expectations, even when lying has no obvious negative repercussions in a survey environment (see also Bernstein, Chadha, & Montjoy 2001). As such, the educated should be more likely to overreport voting.

We turn again to the 2016 ANES for this study, since it includes respondents’ self-reports about their voting behavior as well as validation of whether they actually did so. We can use the discrepancy between the two to test whether education predicts erroneous claims that a respondent voted. According to Silver, Anderson, & Abramson (1986), researchers should measure overreporting by observing self-reports only among validated nonvoters. Measuring overreporting by observing the veracity of self-reports among all respondents or among all respondents who claimed they voted includes populations not at risk for overreporting. Any estimates of variables that contribute to the individual propensity to overreport using these two measures will be sensitive to the marginal distribution of true voters and true nonvoters. In subsequent analyses, we only include ANES respondents who were not validated to have voted in the 2016 general election.⁴

We first show the distribution of overreporters across levels of education in Figure 2.

⁴Specifically, we use votes that were validated through clerical review.

Figure 2: Overreporting among Validated Non-Voters by Level of Education



Source: 2016 American National Election Study.

The majority of all validated non-voters in this sample (59.46%) claimed to have voted, but overreporting varies systematically by education. While roughly 70% of both four-year college degree holders and postgraduate degree holders overreported, the prevalence of overreporting declines as educational attainment decreases. A bare majority of respondents holding only a high school diploma overreported (52.22%) while a minority of respondents without a high school diploma overreported (39.19%).

Next, we test the association of education with overreporting through a logistic regression model that features the same set of demographic and political controls as the models in Study 1. The results are reported in Table 2. Even with the inclusion of controls, education remains positively and significantly associated with overreporting. Substantively, a one-unit increase in education is associated with a five percentage point increase in the probability of overreporting, holding other variables in the model at their means and medians.⁵ Among

⁵The results of logistic regression models using a dummy variable for college education, also reported in

Table 2: Overreporting among Validated Non-Voters

	(1)	(2)
Education	0.20*	
	(0.08)	
College		0.45*
		(0.19)
Age	0.01	0.01
	(0.03)	(0.03)
Age ²	0.00	0.00
	(0.00)	(0.00)
Female	-0.14	-0.12
	(0.17)	(0.17)
White	0.13	0.12
	(0.33)	(0.33)
Black	0.52	0.50
	(0.41)	(0.41)
Hispanic	-0.26	-0.30
	(0.38)	(0.38)
Foreign Born	-0.27	-0.27
	(0.32)	(0.31)
Religious Attendance	0.09	0.09
	(0.06)	(0.06)
PID Strength	0.29*	0.30*
	(0.08)	(0.08)
Interest	0.45*	0.46*
	(0.10)	(0.10)
Constant	-1.92*	-1.70*
	(0.68)	(0.68)
<i>N</i>	961	961
BIC	1317.99	1320.51

Note: * $p < 0.05$. Data from the 2016 ANES. Survey-weighted standard errors in parentheses. Significance tests are two-tailed.

the controls, only strength of partisan identity and interest in politics have a significant, positive relationship with overreporting.

As an additional test of the hypothesis, we replicate the ANES results using data from Table 2, point to a similar conclusion.

the 2016 Cooperative Congressional Election Study, which also validates respondents' voting behavior. Findings are presented in Table 4 in the appendix. The results also show a positive and significant association between education and overreporting among validated non-voters. Similarly to the ANES results, strength of partisan identity and interest in politics are also the only variables to be positively associated with overreporting in both CCES models.

We take these results to mean that as educational attainment increases, individuals are more likely to believe that they *should* report having voted, even if they did not. This finding conforms to our expectations. The results are intriguing given the context of reporting—a survey environment where respondents are promised that responses will remain anonymous. Even with no explicit social pressure placed on them, highly educated respondents usually reported having voted, regardless of whether they voted in reality. This evidence is consistent with the idea that internalization of voting norms is more prevalent among highly educated citizens.

Study 3: Survey Experiment

So far, we have relied on observational data to demonstrate the connection between education and voting through social norms. Next, we draw on an original survey experiment to assess whether the educated respond differently when presented with a hypothetical financial incentive not to vote.

Observing individuals' stated intentions to vote presents another opportunity to study voting norms. Intentions can reveal what individuals wish their behavior to be and often reflect what individuals perceive to be prevailing social norms. For example, many people intend to donate to charity or wish they donated more than they already do. That intention reflects both a broader injunctive norm that it is good for individuals to donate, as well as a personal desire for the individual to conform with that norm.

Pertinent to this study, many national surveys ask respondents whether they intend to

vote in a given upcoming election. The results are often striking; typically, the vast majority of respondents report that they intend to vote. For example, in the 2016 ANES, 94% of respondents reported intending to vote for president while 79% of respondents reported they intended to vote for a member of Congress. The high rate of self-reported intention to vote reflects a widely recognized norm surrounding voting in the U.S. It is clear that most individuals feel like they *should* report that they intend to vote. However, observing intention to vote alone is a poor indicator of norm internalization—it is costless for respondents to parrot expected answers.⁶

Norm internalization is better revealed when respondents are asked to choose between conflicting alternatives. In a survey experiment, we present respondents with a choice between adhering to a norm of voting by stating their intention to vote, and violating the norm when presented with a hypothetical financial incentive to abstain from voting. In line with our internalized norm hypothesis, we expect that the highly educated will be less likely to violate the norm, since they have more fully internalized it. Based on that expectation, we designed a survey experiment that tests the likelihood of norm violations, similar to a design created by White, Laird, & Allen (2014).

We recruited 807 respondents through Amazon’s Mechanical Turk in the spring of 2018. Respondents were randomly assigned to one of three conditions. In the first condition (*Control*), respondents were simply asked, “How likely are you to vote in this year’s midterm elections in November?” Respondents answered on a seven-point Likert scale ranging from “Extremely Unlikely” (1) to “Extremely Likely” (7). Respondents assigned to the first condition served as the control group. Reflecting a widely recognized norm of voting, the majority of respondents reported they were at least somewhat likely to vote (mean response in the Control condition = 5.34).

In the second condition (*Incentive*), respondents were given the following prompt:

⁶An intention to vote could be revealed by an individual overreporting as well. However, in contrast with overreporting, respondents reporting their intentions have no true past behavior on which to base their response.

Suppose that on Election Day for the midterms this November, you find out you've been randomly chosen to win a \$500 cash prize from a drawing you entered. You must claim your prize in person by the end of the day. However, you haven't voted yet. You have time either to claim your prize or to vote, but you can't do both. How likely would you be to turn down the prize and vote?

The prompt encourages respondents to weigh whether they would be willing to violate norms of voting when given an incentive to do so. By design, the prompt grants respondents implicit permission to report that they would *not* vote. We consider this a feature of the design. Respondents without strong normative commitments to voting were given permission to deviate from an expected response that they would vote. At the same time, respondents with a strong normative view of voting could costlessly reaffirm their commitment to participation if they so chose. By pitting the importance of voting directly against a hypothetical incentive, we are testing whether respondents faithfully convey the voting norm when faced with an opposing pressure. This is a sign of the norm's internalization, so withstanding the incentive to not vote indicates that respondents value voting quite highly.

We settled on \$500 as an amount large enough to attract the attention of a wide swath of respondents while not so large as to make abstaining an inevitable decision. (Who wouldn't skip an election to claim a \$1 million prize?) We expect that assignment to the Incentive condition will significantly depress respondents' intention to vote. However, we expect the size of the decrease to be conditional on educational attainment. If voting norms vary across levels of education as predicted, the treatment should depress intention to vote less for high-education respondents than it does for low-education respondents.

In the third condition (*Incentive + Local News*), respondents were presented with the same hypothetical scenario, but were also given the following additional information:

A local TV reporter will be on site to interview you if you accept the prize. The reporter plans to ask you on camera whether you voted.

Whereas respondents in the Incentive condition were presented the choice between an incentive and voting in a social vacuum, respondents in Incentive + Local News were presented with a reminder of potential social consequences for taking the money. The prompt is intended to capture the threat of social pressure (i.e. norm enforcement) in influencing respondents' decisions. If we are correct that voting norms differ across levels of education, we should see that high-education respondents are more susceptible to the social pressure treatment. Empirically, we should see that the social pressure treatment increases the intention to vote among high-education respondents compared to Condition 2 (incentive alone) more than it does the intention to vote among low-education respondents.

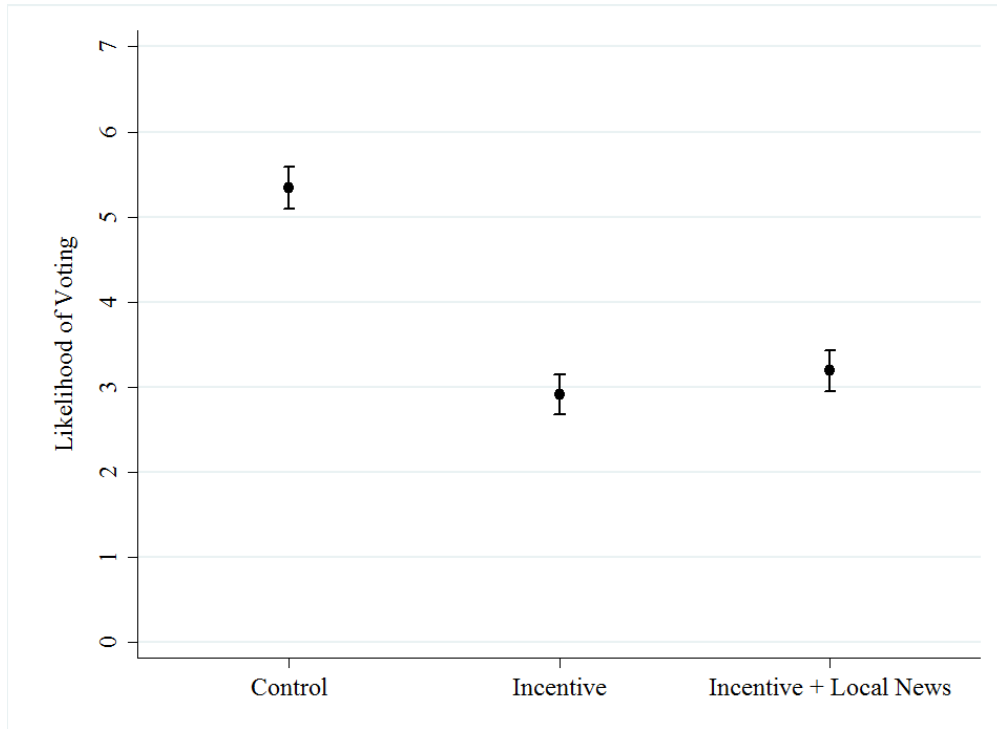
We present the results of these experiments in Figure 3.⁷ The top panel displays the means across conditions. In the Control condition, respondents were quite likely to report an intention to vote (mean = 5.34 on a 7 point scale). As expected, offering respondents an incentive to abstain significantly depressed the Incentive group's intention to vote relative to respondents in the Control condition (-2.43, $p = 0.000$). We do not see evidence of respondents defying the treatment. However, the social pressure treatment in the third experimental condition seems to have been less effective. On average, respondents in the Incentive + Local News condition reported being slightly more likely to vote than respondents in the Incentive condition, but that difference was not statistically significant (0.28, $p = 0.11$).

The principal test of our theoretical expectations comes from the results in Panel B, which presents conditional means for high-education and low-education respondents. If respondents with more education internalize voting norms more fully, we should see a difference in their likelihood of voting in the face of incentives not to vote. For ease of interpretation, we divide education into a binary measure based on whether or not the respondent holds a four-year college degree.

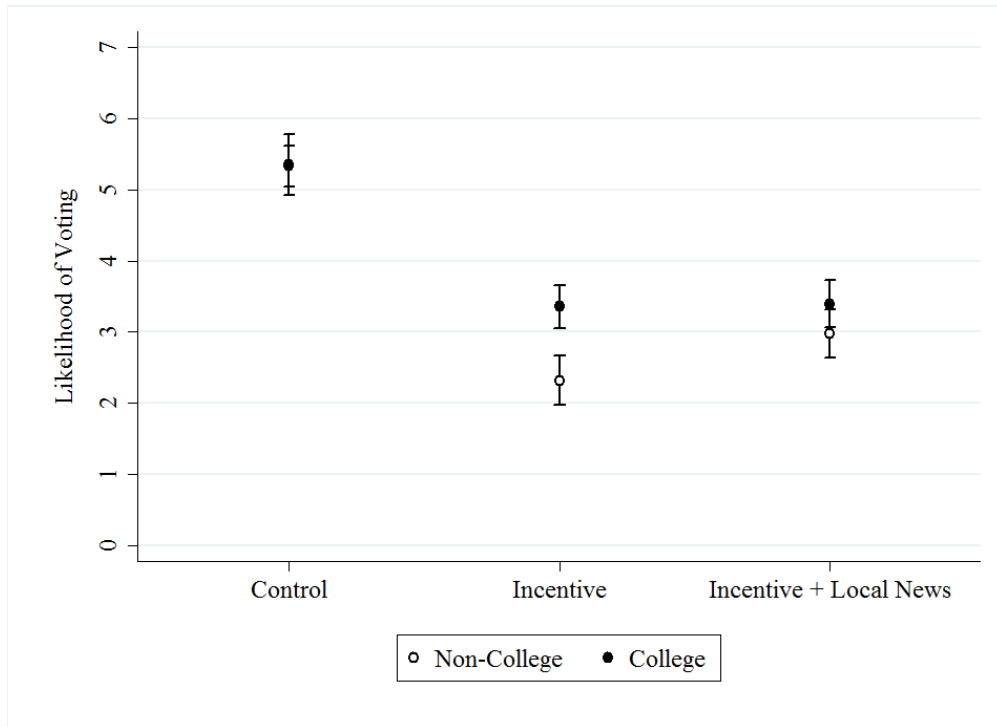
In the Control condition, respondents with and without a college degree report being essentially equally likely to vote. Moving from the Control to the Incentive condition, non-

⁷OLS regression results are presented in Table 5 in the appendix.

Figure 3: Experimental Results



Panel A: Treatment



Panel B: Education

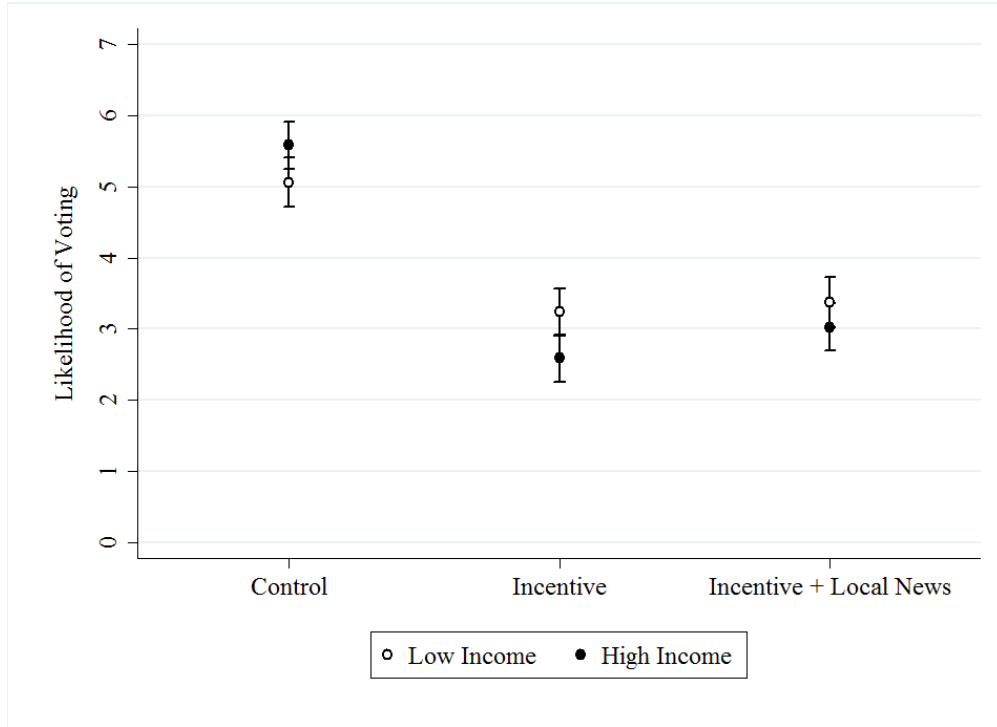
college-educated respondents' likelihood of voting decreases by 3.03 ($p = 0.00$) on a 7-point scale. However, college-educated respondents' likelihood of voting only decreases by 1.98, a significant difference from non-college-educated respondents of 1.05 ($p = 0.00$). This finding is consistent with the expectation that more educated respondents will be less willing to violate norms of voting even when given an incentive to do so.

Next we determine whether social pressure is more effective in driving voting intentions for high-education respondents. Moving from the Incentive to Incentive + Local News condition, non-college-educated respondents report an increase of 0.66 in likelihood of voting on a 7-point scale ($p = 0.10$). College-educated respondents report a small and insignificant increase of 0.04 ($p = 0.87$). The difference in treatment effects across the two groups is -0.62 ($p = 0.08$). This finding is inconsistent with the expectation that more educated respondents will be more susceptible to social pressure.

A possible criticism of our interpretation of the conditional treatment effects is that highly educated respondents are less likely to take the reward because they are in a better position to bear the opportunity costs if they chose to forego the financial prize. Under that explanation, \$500 would be relatively more valuable to low-education respondents than to high-education respondents, perhaps threatening the norms-based interpretation. If the results are driven by the financial resources of the highly educated, we should see the same pattern if we compare high-income respondents' response to treatment with the response of low-income respondents. For ease of interpretation, we divided respondents into two income groups based on whether their household income fell above or below the sample median.

The results appear in Figure 4. Moving from the Control to Incentive condition, low-income respondents' likelihood of voting decreases by 1.83 ($p = 0.00$). However, high-income respondents' likelihood of voting decreases by 3.00 ($p = 0.00$). The difference in treatment effects between these two groups is -1.17 ($p = 0.00$). Inconsistent with a resources explanation, high-income voters (those best able to bear the opportunity cost of forgoing the incentive) actually report being *more* likely to take the money instead of voting. Moving

Figure 4: Experimental Results for High- and Low-Income Respondents



from the Incentive to Incentive + Local News condition reveals little noteworthy in the way social pressure’s effect. Both low-income (0.14, $p = 0.58$) and high-income (0.44 $p = 0.06$) respondents show small but non-significant increases in likelihood of voting, and the difference in treatment effects between groups is small and statistically insignificant (0.30, $p = 0.30$). Taken together, these results suggest that financial need is not driving the conditional effects of education documented above.

The experimental results provide some support for our theory. More educated respondents displayed more resistance to accepting a financial incentive not to vote (evidence suggesting internalized norms). Moreover, the fact that high-income respondents were more likely than low-income respondents to take the financial reward rather than vote casts doubt on the idea that \$500 was relatively more valuable to low-education voters. However, the results also showed that, in the presence of the incentive, additional social pressure in the form of having to be transparent about taking the money in a TV news interview increased low-education respondents’ likelihood of voting more than high-education respondents’ like-

likelihood. This finding, which did not align with expectations, could be reasonably attributed to two possibilities. The first possibility is that non-college educated respondents are more responsive to social pressure than college-educated respondents. A second possibility, compatible with the first, is that college-educated respondents were more likely to have internalized norms, such that additional social pressure to conform with norms did not move their responses across conditions.

Conclusion

The turnout gap between more and less educated American represents a substantial political inequality—one that is unlikely to disappear soon. Even as the share of America’s high school graduates attending college continues to rise, less than half of Americans younger than 35 have completed at least a two-year associate’s degree.⁸ As steadily rising costs threaten to put postsecondary education financially out of reach for large segments of the American population, the political inequalities associated with educational attainment are likely to remain entrenched well into the future. Understanding *why* education spurs voting behavior remains paramount to understanding the turnout gap.

In three studies, we have provided evidence that the educated are more likely to have internalized social norms surrounding voting. First, the educated express greater belief that voting is a civic duty, and this belief partially mediates the effect of educational attainment on voting. Further, internalizing this norm prompts the educated to engage in two additional behaviors: falsely report having voted to avoid social stigma, and withstand financial pressure to deviate from the voting norm. Taken together, this evidence is consistent with our account of education-based voting disparities—more educated individuals vote at higher rates, in part, because of social norms surrounding the practice. To be clear, the effects we uncover are modest. Civic norms help explain the tendency of educated citizens to vote at higher

⁸Fry, Richard. 2017. “U.S. Still Has a Ways to Go in Meeting Obama’s Goal of Producing More College Grads.” *Pew Research Center*. Accessed 31 July 2018 at <http://pewrsr.ch/2jn2PdH>.

rates, but they neither rule out nor overshadow other forces that drive this disparity.

While the idea that the internalization of civic norms varies with educational attainment is not new (see Wolfinger & Rosenstone 1980), little empirical evidence has been provided to support it. Because we do not test our explanation directly against other explanations in the analyses above, we do not know the importance of norms relative to other potential mechanisms for education's effect on voting, such as political knowledge or verbal ability. However, this work does provide evidence that at least some of education's effect comes from the establishment and reinforcement of voting norms.

We view our findings as a corrective to widespread popular explanations of voting disparities that focus overwhelmingly on costs and barriers. The focus on barriers presupposes that people want to vote in the first place, but are prevented from doing so by burdensome administrative requirements, difficulties with accessibility, or a lack of information. Though notable, the evidence that efforts to reduce barriers of these kinds have reduced education-based (or other types of class-based) disparities in turnout is mixed. For example, while reforms over the past half century have been passed primarily with the goal of making voting easier (Springer 2014), the turnout gap by education and income in presidential elections has not noticeably decreased since the 1970s (Leighley & Nagler 2014). An overemphasis on reducing the costs of voting has potential unintended consequences; political scientists have not ruled out that such policies only make it easier for people who were going to vote anyway, thereby exacerbating the turnout gap (e.g. Gronke, Galanes-Rosenbaum, & Miller 2007).

The assumption that voting is a widely recognized normative good thus misunderstands the underlying problem. There is nothing innate or instinctive about participating in contemporary American politics generally or voting in elections specifically. Like many types of social behavior, voting regularly is a learned behavior—principally one that is instilled by communities (including through schooling) and reinforced in social networks. Norms governing individual behavior vary across communities, as do individual incentives, whether

material, social, or psychological (see also Anoll 2018; Doherty et al. 2017). Though a social norm encouraging voting is widespread in the United States, it is certainly not a default.

Our results suggest that disparities in voting will continue to persist until reformers take steps to motivate greater participation in conjunction with their efforts to reduce voting's costs. We have demonstrated that one particular motivation—adhering to a social norm—varies across individuals by level of educational attainment, but this is not the only motivation one might have (Blais & Achen 2018; Collins & Block 2018). Other motivations have a more material basis or a psychological one, where people vote to express symbolic approval or disapproval of a party or particular candidate. Just as we have demonstrated that the propensity to be motivated by a social norm is unequal across the population, the propensity to be motivated by material or value-expressive reasons might vary as well, both by social group and political context. Researchers should devote more attention to these various motivations, including who has them and how they are primed, if they want to help increase the habit of regular voting across the population.

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Appendix

Table 3: Civic Duty and Educational Attainment

	(1)	(2)
Education	0.30*	
	(0.042)	
College		0.74*
		(0.097)
Age	-0.026	-0.024
	(0.014)	(0.014)
Age ²	0.00042*	0.00039*
	(0.00014)	(0.00014)
Female	0.041	0.069
	(0.095)	(0.095)
White	0.32	0.32
	(0.17)	(0.17)
Black	0.80*	0.78*
	(0.22)	(0.21)
Hispanic	0.62*	0.59*
	(0.22)	(0.22)
Foreign Born	0.15	0.12
	(0.20)	(0.20)
Religious Attendance	0.13*	0.13*
	(0.031)	(0.031)
PID Strength	0.30*	0.30*
	(0.049)	(0.049)
Interest	0.36*	0.38*
	(0.059)	(0.058)
Constant	2.11*	2.41*
	(0.37)	(0.37)
<i>N</i>	4092	4092
<i>R</i> ²	0.11	0.11

Note: * $p < 0.05$. Survey-adjusted standard errors are presented in parentheses. Significance tests are two-tailed.

Figure 5: Covariates and Balance in Data Matching in Study 1

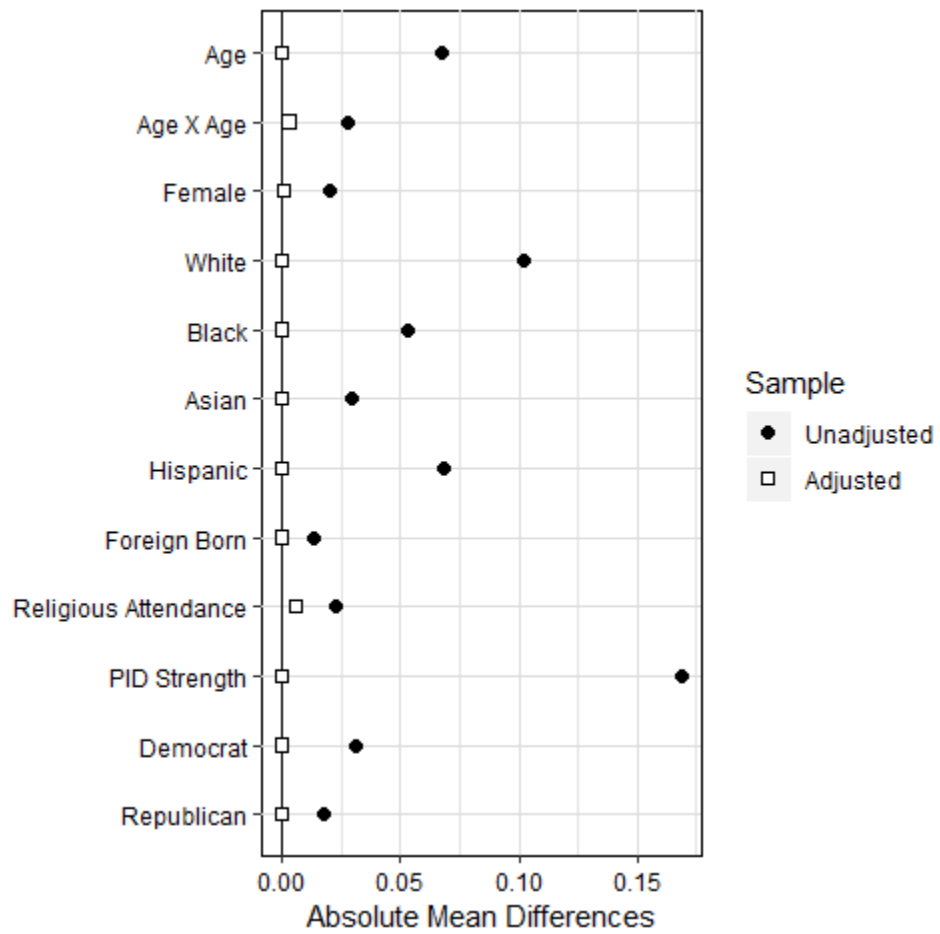
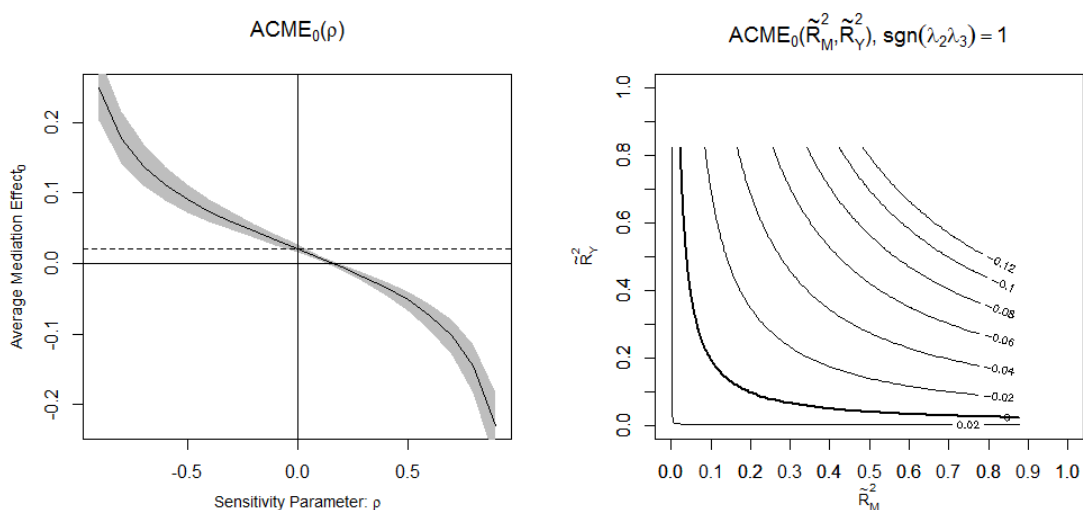
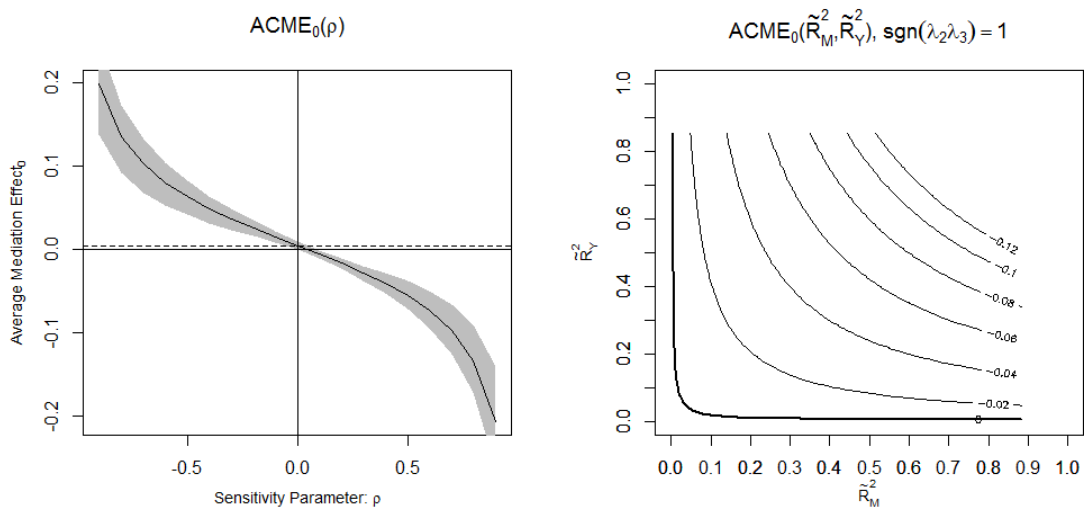


Figure 6: Sensitivity Analysis for Causal Mediation Analysis in Study 1



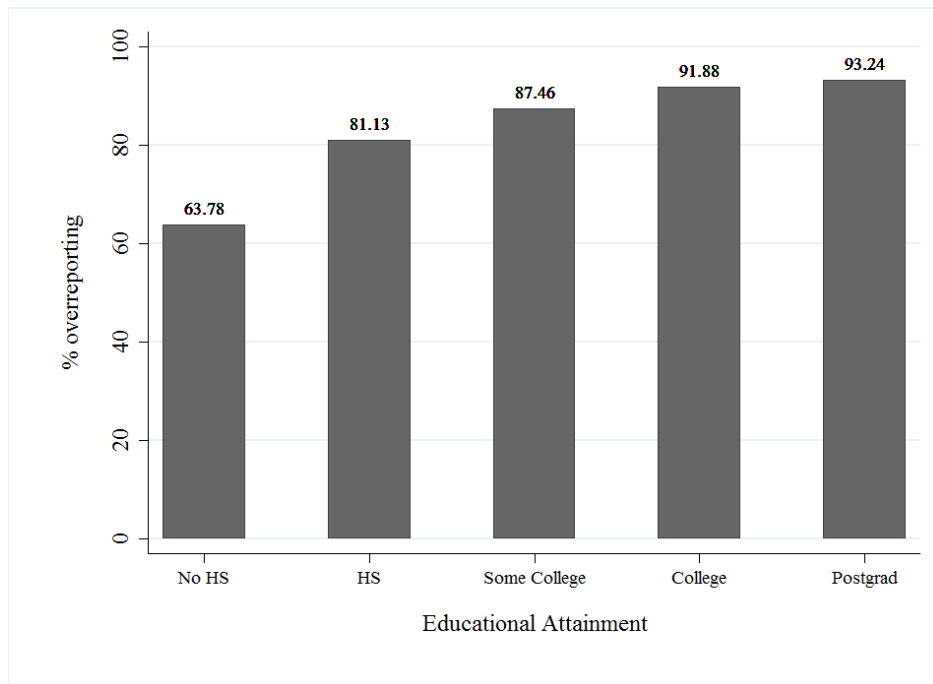
The left panel plots the values of the true ACME against values of the sensitivity parameter ρ . The dashed line represents the estimated ACME when $\rho = 0$ (under sequential ignorability). The estimated ACME for the model is 0.023. The right panel plots the amount of variation a confounding variable would need to explain in the mediating variable M and outcome variable Y to yield a true ACME with a value listed next to the curved line. For this model, the product of the R^2 values necessary for the true ACME to equal 0 is 0.0357.

Figure 7: Sensitivity Analysis for Placebo in Study 1



The left panel plots the values of the true ACME against values of the sensitivity parameter ρ . The dashed line represents the estimated ACME when $\rho = 0$ (under sequential ignorability). The estimated ACME for the model is 0.0005. The right panel plots the amount of variation a confounding variable would need to explain in the mediating variable M and outcome variable Y to yield a true ACME with a value listed next to the curved line. For this model, the product of the R^2 values necessary for the true ACME to equal 0 is 0.

Figure 8: Overreporting among Validated Non-Voters by Level of Education



Source: 2016 Cooperative Congressional Election Study.

Table 4: Overreporting among Validated Non-Voters

	(1)	(2)
Education	0.61* (0.061)	
College		0.95* (0.092)
Age	-0.0065 (0.020)	0.0042 (0.019)
Age ²	0.0004* (0.0002)	0.0003 (0.0002)
Female	-0.19 (0.100)	-0.13 (0.10)
White	0.37* (0.18)	0.33 (0.20)
Black	-0.04 (0.22)	-0.12 (0.23)
Hispanic	0.57* (0.23)	0.45 (0.24)
Foreign Born	-0.28* (0.14)	-0.26 (0.14)
Religious Attendance	0.02 (0.03)	0.03 (0.03)
PID Strength	0.25* (0.04)	0.24* (0.05)
Interest	0.50* (0.06)	0.54* (0.06)
Constant	-1.65* (0.50)	-1.07* (0.50)
<i>N</i>	18,456	18,456

Note: * $p < 0.05$. Data from the 2016 CCES. The results obtained from a survey-weighted logistic regression model with standard errors in parentheses. Significance tests are two-tailed.

Table 5: Experimental Results by Moderating Variable

	(1)	(2)	(3)
	Treatment	Education	Income
Incentive	-2.43*	-3.03*	-1.83*
	(0.17)	(0.28)	(0.25)
Incentive + Local News	-2.15*	-2.38*	-1.69*
	(0.18)	(0.28)	(0.25)
College		-0.02	
		(0.26)	
Incentive X College		1.05*	
		(0.36)	
Incentive + Local News X College		0.44	
		(0.36)	
High-Income			0.52*
			(0.25)
Incentive X High-Income			-1.17*
			(0.34)
Incentive + Local News X High-Income			-0.87*
			(0.35)
Constant	5.34*	5.35*	5.07*
	(0.12)	(0.22)	(0.18)
N	807	807	807
Adj. R^2	0.22	0.24	0.23

Note: * $p < 0.05$. Authors' data. Standard errors are presented in parentheses. Significance tests are two-tailed.